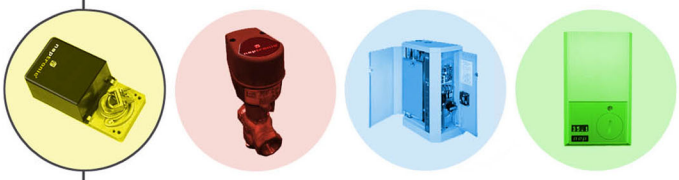
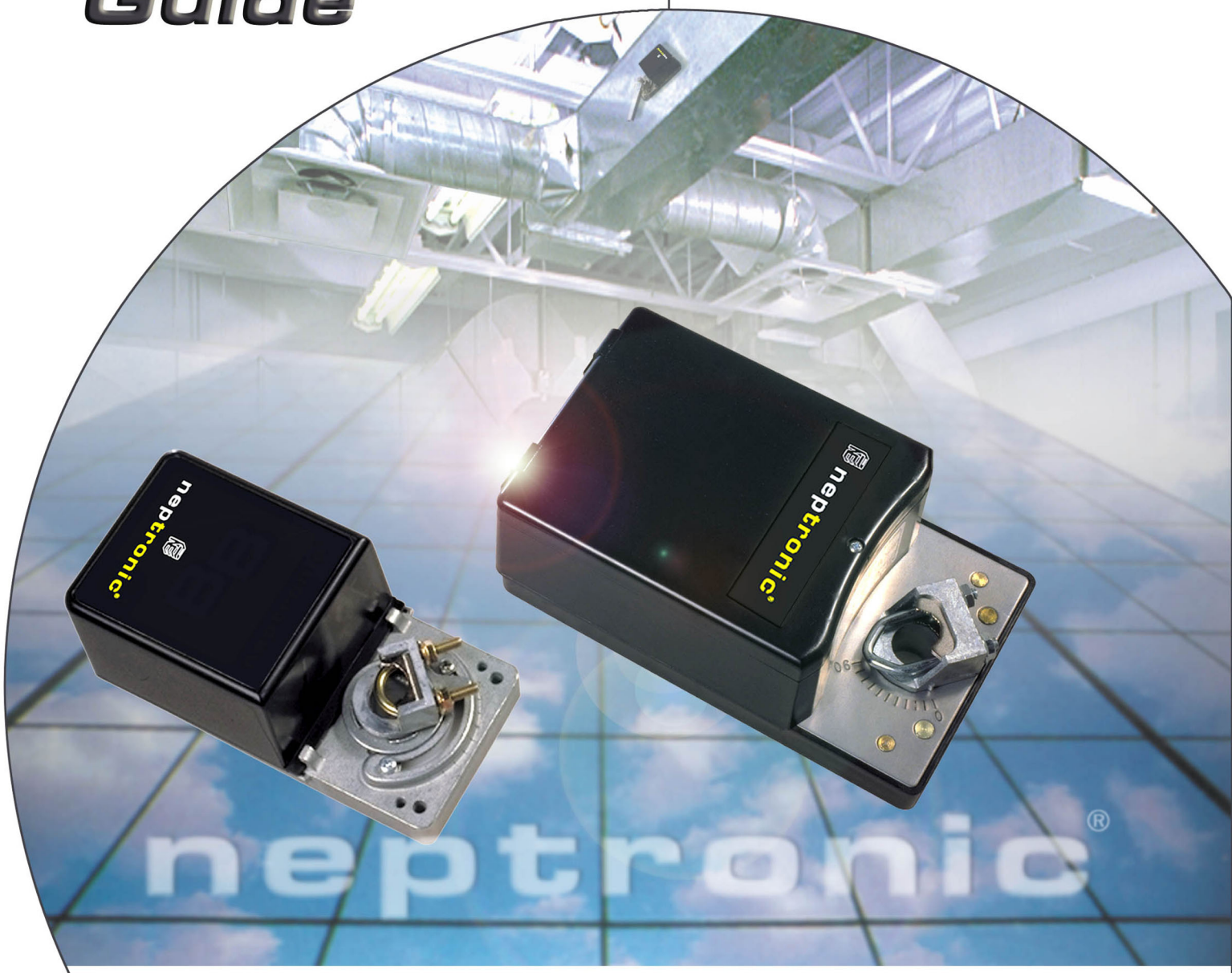
# Actuator Selection Guide






Actuation Through Innovation

**Price List**
**July 1st 2008**

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**www.neptronic.com**

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# Achieving New Heights for the Indoor Environment

## Contents



More than a quarter of a century's manufacturing experience has gone into every product that carries the Neptronic name. From inspiration to realization, innovation has been the standard in design. As a result of this dedication, National Environmental Products owns several patents, notably the Enerdrive System and the AFEC System.

Manufacturing is conducted on the premises of our modern 80,000 sq. ft. facility in Montreal, Canada.The components used are precision engineered and carefully inspected to ensure product integrity and each product manufactured undergoes rigorous testing to guarantee its performance and dependability.

***Important Note:*** *Information such as specification or prices contained in this catalogue is subject to change. For last updated information please consult www.neptronic.com*

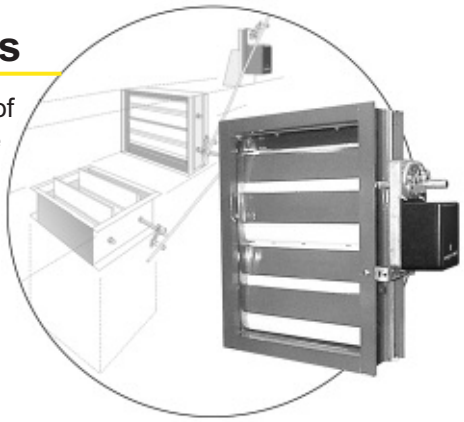
APPLICATIONS

## Neptronic Actuators for Globe Valves

The A and M family of linear actuators operate 2 way and 3 way globe valves. They are equipped with electronic stroke adjustment, can accept analog, tri-state, on/off and PWM control signals and are available with the patented enerdrive fail safe system. They will adapt to many different makes of globe valves with our retrofit linkage assemblies.

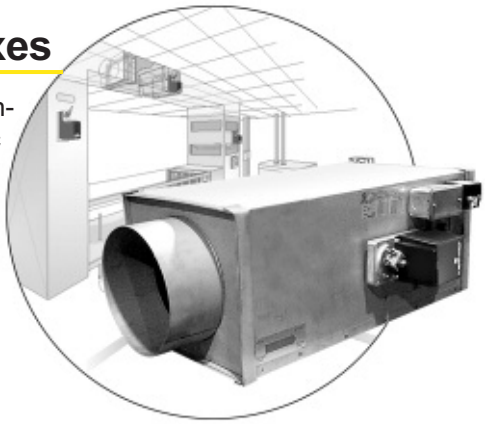
## Neptronic Actuators for Dampers

We build a comprehensive line of damper actuators. The versatile multi-signal actuators, the fast actuators for precise laboratory fume hood control and the high torque U & W actuators place us at the forefront of actuator technology.



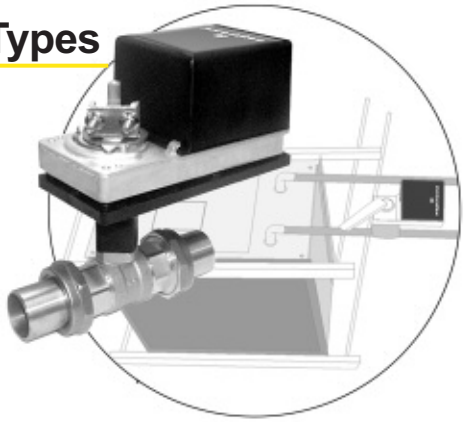
## Neptronic Actuators for VAV Boxes

Neptronic actuators for close control of VAV systems have electronic stroke and zero & span adjustment. They are compatible with building automation systems and are easy to install and commission.



## Neptronic Actuators for various Valve Types

Neptronic actuators mount on ball valves, globe valves and butterfly valves of different size and make, combining rugged mounting hardware with a smooth operation. For fluid control see our Neptronic valve catalog.



***Inherent in each Neptronic actuator***

is the experience gained in addressing the concerns and requirements of the building automation industry. This means simplicity in the appropriate model selection, quick and easy installation and trouble free commissioning. Only Neptronic offers the widest selection of torque output, control signals and rotational speeds in both fail safe and non-fail safe motors. Only Neptronic developed the patented Enerdrive System, the modern, electronic replacement for antiquated spring return.

***The Neptronic family of actuators is***

divided foremost by the torque capability. Direct coupled models deliver up to 18 in.lb. (C), 35 in.lb. (D), 50 in.lb. (B), 70 in.lb. (S), 140 in.lb. (L), 180 in.lb. (T) or 360 in.lb. (R) at rated voltage and are suitable for applications from small variable air volume boxes to large air handler dampers. The most powerful units available (U & W) produce from 1800 in.lb. to 4000 in.lb. and are mounted on large Butterfly valves, vortex dampers or fan inlet guide vanes.

***Control signal selection is simple.***

Choose digital or multi signal (analog) regardless of the size. All digital models, including those with Enerdrive, may be wired for 2 position or 3 point floating control. Similarly, all multi-signal (analog) models may be wired and calibrated in the field to respond to 2-10VDC, 4-20mA, pulse width modulating, 2 position or floating control. In addition, the multi signal (analog) motors feature electronic stroke adjustment and zero & span signal conditioning.

***Neptronic is the leader***

in developing fast response technology. In the B classification, the rotational speed of these models varies from 1.5 to 6 seconds. Their primary use is in fume hood damper control in clean room applications. Larger fast response models with the T and R classification have a 20 second timing and are applicable in smoke control, stairwell pressurization and generator room installations. For applications where fast response is not essential, Neptronic's standard models deliver rotational speeds from 60 to 100 seconds of quiet, smooth operation.

***Neptronic is the only manufacturer***

to incorporate fail safe functionality in all its directly coupled actuator models without any changes to physical dimensions, torque outputs, rotational times or control signal processing. How is this possible? By inventing, in 1992, a super capacitive return system called Enerdrive, Neptronic was able to eliminate the bulky mechanical components that require increased space or that affect either the torque or response time. Since its introduction to the HVAC marketplace, Enerdrive has proven its versatility and dependability.


***Enerdrive, the Electronic Spring is***

a system that is fully incorporated into the PC board for both low and line voltage service. The power generated and stored in its capacitors will drive the controlled device at full rated torque to its safety position. It is 100% operational with the resumption of power. Enerdrive models may be manually positioned with the clutch override that is standard on all Neptronic actuators. Most importantly, the final fail position, either normally open or normally closed may be chosen at any time either before or after installation with the flick of a dip switch. A more detailed description of Enerdrive's operational characteristics is located on page 64.

***Easily installed, Neptronic***

actuators mount directly on the jack shaft without any extra attachments. Neptronic has standardized its electronic functions and programming so that all digital models are wired alike as are all multi signal (analog) models. The end result is faster installation and commissioning.

**Important data required when sizing an actuator to a damper:**

- Size of Damper
- Type of Damper
- Face Velocity
- Static Pressure

Given the above parameters, consult the damper manufacturer's specifications for the torque (in. lb. per square foot) required to operate the damper. (velocity and static pressure charts for the specific style of damper, ie. Parallel blade, opposed blade, with or without blade seals, etc.)

**If no information is available use the following table as an approximate industry standard.**

**DAMPER REQUIREMENTS (in.lb./sq. ft.)**

| | Face Velocity (FPM)/ Static Pressure (in. Wc.) | | | | |
|---|---|---|---|---|---|
| | **<500 FPM** 1 in. Wc. | **500-1000 FPM** 2 in. Wc. | **1000-1500 FPM** 3 in. Wc. | **1500-2000 FPM** 4 in. Wc. | **2000-3000 FPM** 4 in. Wc. |
| Parallel blades with seals | 4 | 7 | 10.5 | 12 | 14 |
| Opposed blades with seals | 3 | 5 | 7.5 | 8.5 | 10 |
| Parallel blades without seals | 3 | 4.5 | 6.5 | 7 | 8 |
| Opposed blades without seals | 2 | 3 | 4.5 | 5 | 6 |

**When the proper torque (in. lb./sq. ft.) is known for the specific damper application:**

**Damper Requirements (in.lb./ft$^2$) X Surface Area of Damper (ft$^2$) = Total Torque (in.lb.) Required**

**When you select your actuator it is good practice to oversize by at least 20%.**

**Note**: For off center pivot dampers, the above rules do not hold. For these types of dampers as well as inlet guide vanes or fan vortex dampers, one must obtain the torque requirements from the manufacturer of the damper.

## Neptronic Actuator Selection Code

| B | M | 0 | 6 | 0 | F | N |
|---|---|---|---|---|---|---|

**TORQUES**

| | |
|---|---|
| C | 18 in.lb. (2 Nm) |
| D | 35 in.lb. (4 Nm) |
| B | 50 in.lb. (5.6 Nm) |
| S | 70 in.lb. (8 Nm) |
| L | 140 in.lb. (16 Nm) |
| T | 180 in.lb. (20 Nm) |
| R | 360 in.lb. (40 Nm) |
| U & W | 1800 to 4000 in.lb. (200 to 450 Nm) |

**CONTROL SIGNAL**

| | |
|---|---|
| T | ON-OFF / 3 point floating |
| M | ON-OFF / 3 point floating / analog / pwm or analog only (2-10vdc) |

**POWER SUPPLY**

| | |
|---|---|
| 0 | 24 vac or 30 vdc |
| 1 | 120 vac |
| 2 | 240 vac |
| 3 | 120/240 vac or 24/120/240 vac |

**FUNCTIONS**

| | |
|---|---|
| 00 | standard |
| 05 | potentiometer (feedback, 5 K ohms) |
| 10 | Fail Safe (battery) |
| 20 | auxiliary contacts (2) |
| 30 | Fail Safe (battery) & auxiliary contacts (2) |
| 60* | Fail Safe (Enerdrive*) |
| 65* | Fail Safe (Enerdrive*) & potentiometer (feedback, 5 K ohms) |
| 80* | Fail Safe (Enerdrive*) & auxiliary contacts (2) |

**OPTIONS**

| | |
|---|---|
| - | leave blank if no option |
| F | fast (BT=6sec., BM=3.5sec., T & R=20sec.) |
| FF | very fast (BM=1.5sec.) |
| S | Slow motion (90 seconds running time) |
| X_ _ | Smoke Damper actuator<br>4 = 35 in.lb. (4 Nm), 8 = 70 in.lb. (8 Nm) & 11 = 90 in.lb. (11 Nm) |
| N | Brushless Motor D.C. |
| W | IP65 equivalent to Nema type 4 enclosure, available for L, T and R series actuators |

*ENERDRIVE: fail safe system by electronic spring U.S. patent #5,278,454

# Actuator Flow Charts (18 to 70 in.lb. torque)

neptronic®

**18 to 70 in.lb. torque fail safe actuators (enerdrive system)**

**Torque 18in.lb.** (2Nm)

**C**

| on-off/3 point floating | Analog |
|---|---|
| 24VAC | 24VAC |
| CT060S<br>CT065S▲<br>CT080S◆ | CM060S<br>CM080S◆ |

**Torque 35in.lb.** (4Nm)

**D**

| on-off/3 point floating | Analog |
|---|---|
| 24VAC | 24VAC |
| DT060S<br>DT065S▲<br>DT080S◆ | DM060S<br>DM080S◆ |

**Torque 50in.lb.** (5.6Nm)

**B**

| on-off/3 point floating | Multi Signal (Analog) |
|---|---|
| 24VAC | 24VAC |
| BT060<br>BT065▲<br>BT080◆<br>BT060S<br>BT065S▲<br>BT080S◆ | BM060<br>BM060N■<br>BM080◆<br>BM060S<br>BM080S◆ |

**Torque 70in.lb.** (8Nm)

**S**

| on-off/3 point floating | Analog |
|---|---|
| 24VAC | 24VAC |
| ST060S<br>ST065S▲<br>ST080S◆ | SM060S<br>SM080S◆ |

**Torque 18in.lb.** (2Nm)

**C**

| on-off/3 point floating | Analog |
|---|---|
| 120VAC | 120VAC |
| CT160S<br>CT165S▲<br>CT180S◆ | CM160S<br>CM180S◆ |
| 240VAC | 240VAC |
| CT260S<br>CT265S▲<br>CT280S◆ | CM260S<br>CM280S◆ |

**Torque 35in.lb.** (4Nm)

**D**

| on-off/3 point floating | Analog |
|---|---|
| 120VAC | 120VAC |
| DT160S<br>DT165S▲<br>DT180S◆ | DM160S<br>DM180S◆ |
| 240VAC | 240VAC |
| DT260S<br>DT265S▲<br>DT280S◆ | DM260S<br>DM280S◆ |

**Torque 50in.lb.** (5.6Nm)

**B**

| on-off/3 point floating | Analog |
|---|---|
| 120VAC | 120VAC |
| BT160<br>BT180◆<br>BT160S<br>BT165S▲<br>BT180S◆ | BM160S |
| 240VAC | 240VAC |
| BT260<br>BT280◆<br>BT260S<br>BT265S▲<br>BT280S◆ | BM260S |

**Torque 70in.lb.** (8Nm)

**S**

| on-off/3 point floating | Analog |
|---|---|
| 120VAC | 120VAC |
| ST160S<br>ST165S▲<br>ST180S◆ | SM160S |
| 240VAC | 240VAC |
| ST260S<br>ST265S▲<br>ST280S◆ | SM260S |

■ Neptronic actuator models ending in “N” are brushless motors.
◆ Neptronic actuator models ending in “80 (S)” include Enerdrive (Fail safe) and End Switches.
▲ Neptronic actuator models ending in “65 (S)” include Enerdrive (Fail safe) and Feedback.

# Actuator Flow Charts (50 to 70 in.lb. torque)

## 50 to 70 in.lb. torque non fail safe actuators

### Torque 50in.lb. (5.6Nm)

**B**

#### on-off/3 point floating

**24VAC**

- BT000
- BT005▼
- BT020 ●
- BT000S
- BT005S▼
- BT020S ●

#### Multi Signal (Analog)

**24VAC**

- BM000
- BM000N■
- BM020 ●
- BM020N■●
- BM000S
- BM020S ●

### Torque 70in.lb. (8Nm)

**S**

#### on-off/3 point floating

**24VAC**

- ST000S
- ST005S▼
- ST020S ●

#### Analog

**24VAC**

- SM000S
- SM020S ●

### Torque 50in.lb. (5.6Nm)

**B**

#### on-off/3 point floating

**120VAC**

- BT100
- BT105▼
- BT120●
- BT100S
- BT105S▼
- BT120S●

**240VAC**

- BT200
- BT205▼
- BT220●
- BT200S
- BT205S▼
- BT220S●

#### Analog

**120VAC**

- BM100S

**240VAC**

- BM200S

### Torque 70in.lb. (8Nm)

**S**

#### on-off/3 point floating

**120VAC**

- ST100S
- ST105S▼
- ST120S ●

**240VAC**

- ST200S
- ST205S▼
- ST220S ●

#### Analog

**120VAC**

- SM100S

**240VAC**

- SM200S

■ Neptronic actuator models ending in “N” are brushless motors.
● Neptronic actuator models ending in “20 (S)” include End Switches.
▼ Neptronic actuator models ending in “05 (S)” include Feedback.

# Actuator Flow Charts (140 to 4000 in.lb torque)

neptronic®

**140 to 4000 in.lb. torque fail safe actuators (enerdrive system)**

**Torque 140in.lb.** (16Nm)

**L**

- on-off/3 point floating
  - 24VAC
    - LT060
    - LT065▲
    - LT080◆
- Multi Signal (Analog)
  - 24VAC
    - LM060
    - LM080◆

**Torque 180in.lb.** (20Nm)

**T**

- on-off/3 point floating
  - 24VAC
    - TT060
    - TT065▲
    - TT080◆
- Multi Signal (Analog)
  - 24VAC
    - TM060
    - TM080◆
    - TM060N■
    - TM080N◆■

**Torque 360in.lb.** (40Nm)

**R**

- on-off/3 point floating
  - 24VAC
    - RT060
    - RT065▲
    - RT080◆
- Multi Signal (Analog)
  - 24VAC
    - RM060
    - RM080◆
    - RM060N■
    - RM080N◆■

**Torque range 1800 to 4000in.lb.** (200 to 450Nm)

**U & W**

- on-off/3 point floating
  - 24VAC
    - UT010
    - UT030◆
    - WT010
    - WT030◆
- Multi Signal (Analog)
  - 24VAC
    - UM010
    - UM030❖
    - WM010
    - WM030❖

**Torque 140in.lb.** (16Nm)

**L**

- on-off/3 point floating
  - 120/240VAC
    - LT360
    - LT365▲
    - LT380◆
- Multi Signal (Analog)
  - 120/240VAC
    - LM360
    - LM380◆

**Torque 180in.lb.** (20Nm)

**T**

- on-off/3 point floating
  - 120/240VAC
    - TT360
    - TT365▲
    - TT380◆
- Multi Signal (Analog)
  - 120/240VAC
    - TM360
    - TM380◆
    - TM360N■

**Torque 360in.lb.** (40Nm)

**R**

- on-off/3 point floating
  - 120/240VAC
    - RT360
    - RT365▲
    - RT380◆
- Multi Signal (Analog)
  - 120/240VAC
    - RM360
    - RM380◆
    - RM360N■

**Torque range 2500 to 4000in.lb.** (280 to 450Nm)

**U & W**

- Multi Signal (Analog)
  - 120/240VAC
    - UM310
    - UM330❖
    - WM310
    - WM330❖

■ Neptronic actuator models ending in “N” are brushless motors.
◆ Neptronic actuator models ending in “80” include Enerdrive (Fail safe) and End Switches.
▲ Neptronic actuator models ending in “65” include Enerdrive (Fail safe) and Feedback.
❖ Neptronic actuator models ending in “30” include Battery (Fail safe) and End Switches.

# Actuator Flow Charts (140 to 4000 in.lb torque)

**140 to 4000 in.lb. torque Non fail safe actuators**

## Torque 140in.lb. (16Nm)

**L**

| on-off/3 point floating | Multi Signal (Analog) |
|---|---|
| 24VAC | 24VAC |
| LT000<br>LT005▼<br>LT020● | LM000<br>LM020● |

## Torque 180in.lb. (20Nm)

**T**

| on-off/3 point floating | Multi Signal (Analog) |
|---|---|
| 24VAC | 24VAC |
| TT000<br>TT005▼<br>TT020● | TM000<br>TM020●<br>TM000N■<br>TM020N●■ |

## Torque 360in.lb. (40Nm)

**R**

| on-off/3 point floating | Multi Signal (Analog) |
|---|---|
| 24VAC | 24VAC |
| RT000<br>RT005▼<br>RT020● | RM000<br>RM020●<br>RM000N■<br>RM020N●■ |

## Torque range 1800 to 4000in.lb. (200 to 450Nm)

**U & W**

| on-off/3 point floating | Multi Signal (Analog) |
|---|---|
| 24VAC | 24VAC |
| UT000<br>UT020●<br>WT000<br>WT020● | UM000<br>UM020●<br>WM000<br>WM020● |

## Torque 140in.lb. (16Nm)

**L**

| on-off/3 point floating | Multi Signal (Analog) |
|---|---|
| 120/240VAC | 120/240VAC |
| LT300<br>LT305▼<br>LT320● | LM300<br>LM320● |

## Torque 180in.lb. (20Nm)

**T**

| on-off/3 point floating | Multi Signal (Analog) |
|---|---|
| 120/240VAC | 120/240VAC |
| TT300<br>TT305▼<br>TT320● | TM300<br>TM320●<br>TM300N■<br>TM320N●■ |

## Torque 360in.lb. (40Nm)

**R**

| on-off/3 point floating | Multi Signal (Analog) |
|---|---|
| 120/240VAC | 120/240VAC |
| RT300<br>RT305▼<br>RT320■ | RM300<br>RM320●<br>RM300N■<br>RM320N●■ |

## Torque range 2500 to 4000in.lb. (280 to 450Nm)

**U & W**

| Multi Signal (Analog) |
|---|
| 120/240VAC |
| UM300<br>UM320●<br>WM300<br>WM320● |

■ Neptronic actuator models ending in “N” are brushless motors.
● Neptronic actuator models ending in “20” include End Switches.
▼ Neptronic actuator models ending in “05” include Feedback.

# C Series Actuator (slow motion)

neptronic®

### *18 in.lb. (2 Nm) torque*

**PRIMARY USES FOR THESE ACTUATORS**

- small dampers
- VAV box control
- unit ventilators
- fan coils

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/30VDC, 120VAC or 240VAC Depending upon the Model |
| ***Power Consumption:*** | Peak at Start-up: 10VA at 26VAC or at Line Voltage |
| | Operating at Full Load: 3VA at 26VAC or at Line Voltage |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | 5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (CT):** |
| | 2 Wire 2 Position and 4 Wire 3 Point Floating |
| | **Analog (CM):** |
| | A) 2-10VDC; or B) 4-20mA |
| ***Torque:*** | **18 in.lb. (2 Nm) at Rated Voltage** |
| ***Direction & Time of Rotation:*** | Reversible, 80 Sec. at no load and 100 sec at full load |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (CTXX5S):** Potentiometer (5Kohms) |
| ***Fail Safe (Enerdrive) Rating:*** | 18 in.lb. (2 Nm) |
| ***Enerdrive Response Time:*** | 20-40 Seconds Closure Through 90°, 18 in.lb. (2 Nm) |
| ***Auxiliary Switches:*** | **Models Ending in 80S:** 2 Mechanical, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 5 Amp Resistive, 250VAC |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V |
| ***GearTrain Enclosure:*** | Die Cast Zinc with a Steel Base |

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for low voltage applications* | | | | | | | | | | | | | | | |
| **CT060S** | 24VAC 30VDC | 10VA | 3VA | ◆ | ◆ | | | | 80 to 100 | | | | ◆ | | $ 220 |
| **CT065S** | 24VAC 30VDC | 10VA | 3VA | ◆ | ◆ | | | | 80 to 100 | ◆ | | | ◆ | | $ 274 |
| **CT080S** | 24VAC 30VDC | 10VA | 3VA | ◆ | ◆ | | | | 80 to 100 | | | | ◆ | ◆ | $ 280 |
| **CM060S** | 24VAC 30VDC | 10VA | 3VA | | | ◆ | ◆ | | 80 to 100 | | | | ◆ | | $ 264 |
| **CM080S** | 24VAC 30VDC | 10VA | 3VA | | | ◆ | ◆ | | 80 to 100 | | | | ◆ | ◆ | $ 324 |
| *for line voltage applications* | | | | | | | | | | | | | | | |
| **CT160S** | 120VAC | 10VA | 3VA | ◆ | ◆ | | | | 80 to 100 | | | | ◆ | | $ 253 |
| **CT165S** | 120VAC | 10VA | 3VA | ◆ | ◆ | | | | 80 to 100 | ◆ | | | ◆ | | $ 307 |
| **CT180S** | 120VAC | 10VA | 3VA | ◆ | ◆ | | | | 80 to 100 | | | | ◆ | ◆ | $ 313 |
| **CT260S** | 240VAC | 10VA | 3VA | ◆ | ◆ | | | | 80 to 100 | | | | ◆ | | $ 253 |
| **CT265S** | 240VAC | 10VA | 3VA | ◆ | ◆ | | | | 80 to 100 | ◆ | | | ◆ | | $ 307 |
| **CT280S** | 240VAC | 10VA | 3VA | ◆ | ◆ | | | | 80 to 100 | | | | ◆ | ◆ | $ 313 |
| **CM160S** | 120VAC | 10VA | 3VA | | | ◆ | ◆ | | 80 to 100 | | | | ◆ | | $ 286 |
| **CM180S** | 120VAC | 10VA | 3VA | | | ◆ | ◆ | | 80 to 100 | | | | ◆ | ◆ | $ 346 |
| **CM260S** | 240VAC | 10VA | 3VA | | | ◆ | ◆ | | 80 to 100 | | | | ◆ | | $ 286 |
| **CM280S** | 240VAC | 10VA | 3VA | | | ◆ | ◆ | | 80 to 100 | | | | ◆ | ◆ | $ 346 |

# D Series Actuator (slow motion)

neptronic®

### *35 in.lb. (4 Nm) torque*

**PRIMARY USES FOR THESE ACTUATORS**

- small dampers
- unit ventilators
- 1/4 turn valves
- VAV box control
- fan coils

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/30VDC, 120VAC or 240VAC Depending upon the Model |
| ***Power Consumption:*** | Peak at Start-up: 15VA at 26VAC<br>12VA at Line Voltage<br>Operating at Full Load: 6VA at 26VAC or at Line Voltage |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | 5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (DT):**<br>2 Wire 2 Position and 4 Wire 3 Point Floating<br>**Analog (DM):**<br>A) 2-10VDC; or B) 4-20mA |
| ***Torque:*** | **35 in.lb. (4 Nm) at Rated Voltage** |
| ***Direction & Time of Rotation:*** | Reversible, 90 Sec. / 0-35 in.lb. (0-4 Nm) |
| ***Ambient Temperature:*** | -22°F to +122°F (-30°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (DTXX5S):** Potentiometer (5Kohms) |
| ***Fail Safe (Enerdrive) Rating:*** | 35 in.lb. (4 Nm) |
| ***Enerdrive Response Time:*** | 70-80 Seconds Closure Through 90°, 0-35 in.lb. (0-4 Nm) Depending upon the Model |
| ***Auxiliary Switches:*** | **Models Ending in 80S:** 2 Mechanical, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 1 Amp Resistive, 24VAC or 5 Amp Resistive, 250VAC Depending upon the model |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V |
| ***GearTrain Enclosure:*** | Die Cast Zinc with a Steel Base |

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90⁰ Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for low voltage applications* | | | | | | | | | | | | | | | |
| **DT060S** (MDTS1060) | 24VAC 30VDC | 15VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | | $ 242 |
| **DT065S** (MDTS1065) | 24VAC 30VDC | 15VA | 6VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | ◆ | | $ 302 |
| **DT080S** (MDTS1080) | 24VAC 30VDC | 15VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | ◆ | $ 302 |
| **DM060S** (MDMS2060) | 24VAC 30VDC | 15VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | | $ 286 |
| **DM080S** (MDMS2080) | 24VAC 30VDC | 15VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | ◆ | $ 346 |
| *for line voltage applications* | | | | | | | | | | | | | | | |
| **DT160S** | 120VAC | 12VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | | $ 274 |
| **DT165S** | 120VAC | 12VA | 6VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | ◆ | | $ 329 |
| **DT180S** | 120VAC | 12VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | ◆ | $ 335 |
| **DT260S** | 240VAC | 12VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | | $ 274 |
| **DT265S** | 240VAC | 12VA | 6VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | ◆ | | $ 329 |
| **DT280S** | 240VAC | 12VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | ◆ | $ 335 |
| **DM160S** | 120VAC | 12VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | | $ 307 |
| **DM180S** | 120VAC | 12VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | ◆ | $ 368 |
| **DM260S** | 240VAC | 12VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | | $ 307 |
| **DM280S** | 240VAC | 12VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | ◆ | $ 368 |

**Note:** **All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008**

# B Series Actuator (low voltage)

neptronic®

### *50 in.lb. (5.6 Nm) torque*

**PRIMARY USES FOR THESE ACTUATORS**

- small dampers
- unit ventilators
- 1/4 turn valves
- VAV box control
- fan coils

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in digital models and electronically in Multi Signal models.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/30VDC or 24VDC Depending upon the Model |
| ***Power Consumption:*** | Peak at Start-up: 3VA to 24VA at 26VAC Depending upon the Model<br>Operating at Full Load: 3VA to 15VA at 26VAC Depending upon the Model |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | 5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (BT):**<br>2 Wire or 3 Wire 2 Position and 3 Wire or 4 Wire 3 Point Floating Depending upon the Model<br>**Multi Signal (BM):**<br>**ANALOG:** A) 2-10VDC; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable<br>**PULSE WIDTH MODULATION:** Time Base of 0.1 - 5 Seconds/20mS Resolution or 0.1 - 25 Seconds/100mS Resolution Selected by Dip Switch Position<br>SWITCH HOT: Triac or Dry Contact, 40mA Max. Switching Current<br>SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current<br>**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating |
| ***Torque:*** | **50 in.lb. (5.6 Nm) at Rated Voltage** |
| ***Direction & Time of Rotation:*** | Reversible, 15-30 Sec. or 90-110 Sec. / 0-50 in.lb. (0-5.6 Nm) Depending upon the Model |
| ***Ambient Temperature:*** | -22°F to +122°F (-30°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (BTXX5):** Potentiometer (5 Kohms)<br>**In Multi Signal (BM):** 4-20mA Output (May be wired for a 2-10VDC signal) |
| ***Fail Safe (Enerdrive) Rating:*** | **Models Ending in 60, 65, 80 or 60N:** 50 in.lb. (5.6 Nm) |
| ***Enerdrive Response Time:*** | 20-30 Seconds Closure Through 90°, 0-50 in.lb. (0-5.6 Nm) |
| ***Auxiliary Switches:*** | **Models Ending in, 20, 80 or 20N:** 2 Mechanical, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 1 Amp Resistive, 24VAC or 5 Amp Resistive, 250VAC Depending upon the Model |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V |
| ***GearTrain Enclosure:*** | Die Cast Zinc with a Steel Base |

# B Series (low voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for low voltage applications* | | | | | | | | | | | | | | | |
| **BT000** (BBT1000 A) | 24VAC 30VDC | 6VA | 6VA | ◆ | ◆ | | | | 20 to 30 | | | | | | $ 144 |
| **BT005** (BBT1005 A) | 24VAC 30VDC | 6VA | 6VA | ◆ | ◆ | | | | 20 to 30 | ◆ | | | | | $ 188 |
| **BT020** (BBT1021 A) | 24VAC 30VDC | 6VA | 6VA | ◆ | ◆ | | | | 20 to 30 | | | | | ◆ | $ 203 |
| **BT060** (BBT1060 A) | 24VAC 30VDC | 15VA | 6VA | ◆ | ◆ | | | | 20 to 30 | | | | ◆ | | $ 269 |
| **BT065** (BBT1065 A) | 24VAC 30VDC | 15VA | 6VA | ◆ | ◆ | | | | 20 to 30 | ◆ | | | ◆ | | $ 307 |
| **BT080** (BBT1080 A) | 24VAC 30VDC | 15VA | 6VA | ◆ | ◆ | | | | 20 to 30 | | | | ◆ | ◆ | $ 329 |
| **BT400** (BBT24 A) | 24VAC | 3VA | 3VA | | ◆ | | | | 90 to 110 | | | | | | $ 160 |
| **BT405** (BBT24 AP) | 24VAC | 3VA | 3VA | | ◆ | | | | 90 to 110 | ◆ | | | | | $ 203 |
| **BT420** (BBT24 AAX) | 24VAC | 3VA | 3VA | | ◆ | | | | 90 to 110 | | | | | ◆ | $ 220 |
| **BM000** (BBM2000 A) | 24VAC 30VDC | 6VA | 6VA | ◆ | ◆ | ◆ | ◆ | ◆ | 20 to 30 | ◆ | ◆ | ◆ | | | $ 236 |
| **BM020** (BBM2021 A) | 24VAC 30VDC | 6VA | 6VA | ◆ | ◆ | ◆ | ◆ | ◆ | 20 to 30 | ◆ | ◆ | ◆ | | ◆ | $ 297 |
| **BM060** (BBM2060 A) | 24VAC 30VDC | 15VA | 6VA | ◆ | ◆ | ◆ | ◆ | ◆ | 20 to 30 | ◆ | ◆ | ◆ | ◆ | | $ 329 |
| **BM080** (BBM2080 A) | 24VAC 30VDC | 15VA | 6VA | ◆ | ◆ | ◆ | ◆ | ◆ | 20 to 30 | ◆ | ◆ | ◆ | ◆ | ◆ | $ 389 |
| **BM400** (BBM24 A) | 24VAC | 4VA | 4VA | ◆ | ◆ | ◆ | ◆ | ◆ | 90 to 100 | ◆ | ◆ | ◆ | | | $ 247 |
| **BM420** (BBT24 AAX) | 24VAC | 4VA | 4VA | ◆ | ◆ | ◆ | ◆ | ◆ | 90 to 100 | ◆ | ◆ | ◆ | | ◆ | $ 307 |
| **BM000N** (BBM2000 NA) | 24VAC 30VDC | 15VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 15 | ◆ | ◆ | ◆ | | | $ 340 |
| **BM020N** (BBM2021 NA) | 24VAC 30VDC | 15VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 15 | ◆ | ◆ | ◆ | | ◆ | $ 400 |
| **BM060N** (BBM2060 NA) | 24VAC 30VDC | 24VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 15 | ◆ | ◆ | ◆ | ◆ | | $ 444 |

**Note:** **All actuators are powered by brush motors except those ending with the letter "N"**
**All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008**

*50 in.lb. (5.6 Nm) torque*

**PRIMARY USES FOR THESE ACTUATORS**

- small dampers
- VAV box control
- unit ventilators
- fan coils
- 1/4 turn valves

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in digital models and electronically in Multi Signal models.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 120VAC or 240VAC Depending upon the Model |
| ***Power Consumption:*** | Peak at Start-up: 8VA to 7 Watts at Line Voltage Depending upon the Model<br>Operating at Full Load: 5VA to 7 Watts at Line Voltage Depending upon the Model |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | 5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (BT):**<br>2 Wire or 3 Wire 2 Position and 3 Wire 3 Point Floating Depending upon the Model |
| ***Torque:*** | **50 in.lb. (5.6 Nm) at Rated Voltage** |
| ***Direction & Time of Rotation:*** | Reversible, 20-30 Sec. / 0-50 in.lb. (0-5.6 Nm) Depending upon the Model |
| ***Ambient Temperature:*** | -22°F to +122°F (-30°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (BTXX5):** Potentiometer (5 Kohms) |
| ***Fail Safe (Enerdrive) Rating:*** | **Models Ending in 60 or 80:** 50 in.lb. (5.6 Nm) |
| ***Enerdrive Response Time:*** | 20-30 Seconds Closure Through 90°, 0-50 in.lb. (0-5.6 Nm) |
| ***Auxiliary Switches:*** | **Models Ending in, 20 or 80:** 2 Mechanical, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 1 Amp Resistive, 24VAC or 5 Amp Resistive, 250VAC Depending upon the Model |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V |
| ***GearTrain Enclosure:*** | Die Cast Zinc with a Steel Base |

# B Series (line voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for line voltage applications* | | | | | | | | | | | | | | | |
| **BT100** (BBTHV1100 A) | 120VAC | 4 watts | 4 watts | ◆ | ◆ | | | | 20 to 30 | | | | | | $ 165 |
| **BT105** (BBTHV1105 A) | 120VAC | 4 watts | 4 watts | ◆ | ◆ | | | | 20 to 30 | ◆ | | | | | $ 220 |
| **BT120** (BBTHV1121 A) | 120VAC | 4 watts | 4 watts | ◆ | ◆ | | | | 20 to 30 | | | | | ◆ | $ 226 |
| **BT160** (BBTHV1160 A) | 120VAC | 8VA | 5VA | ◆ | | | | | 20 to 30 | | | | ◆ | | $ 297 |
| **BT180** (BBTHV1180 A) | 120VAC | 8VA | 5VA | ◆ | | | | | 20 to 30 | | | | ◆ | ◆ | $ 357 |
| **BT200** (BBTHV1200 A) | 240VAC | 7 watts | 7 watts | ◆ | ◆ | | | | 20 to 30 | | | | | | $ 165 |
| **BT205** (BBTHV1205 A) | 240VAC | 7 watts | 7 watts | ◆ | ◆ | | | | 20 to 30 | ◆ | | | | | $ 220 |
| **BT220** (BBTHV1221 A) | 240VAC | 7 watts | 7 watts | ◆ | ◆ | | | | 20 to 30 | | | | | ◆ | $ 226 |
| **BT260** (BBTHV1260 A) | 240VAC | 8VA | 5VA | ◆ | | | | | 20 to 30 | | | | ◆ | | $ 297 |
| **BT280** (BBTHV1280 A) | 240VAC | 8VA | 5VA | ◆ | | | | | 20 to 30 | | | | ◆ | ◆ | $ 357 |

**Note:** **All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008**

# B Series Actuator (slow motion low voltage)

neptronic®

### *50 in.lb. (5.6 Nm) torque*

**PRIMARY USES FOR THESE ACTUATORS**

- small dampers
- VAV box control
- unit ventilators
- fan coils
- 1/4 turn valves

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/30VDC, 24VDC or 48VDC Depending upon the Model |
| ***Power Consumption:*** | Peak at Start-up: 3VA to 15VA at 26VAC Depending upon the Model<br>Operating at Full Load: 3VA to 6VA at 26VAC |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | 5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (BT):**<br>2 Wire or 3 Wire 2 Position and 3 Wire or 4 Wire 3 Point Floating Depending upon the Model<br>**Analog (BM):**<br>A) 2-10VDC; or B) 4-20mA |
| ***Torque:*** | **50 in.lb. (5.6 Nm) at Rated Voltage** |
| ***Direction & Time of Rotation:*** | Reversible, 90 to 110 Sec. or 180 to 220 Sec. / 0-50 in.lb. (0-5.6 Nm) Depending upon the Model |
| ***Ambient Temperature:*** | -22°F to +122°F (-30°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (BTXX5S):** Potentiometer (5 Kohms) |
| ***Fail Safe (Enerdrive) Rating:*** | **Models Ending in 60S, 65S or 80S:** 50 in.lb. (5.6 Nm) |
| ***Enerdrive Response Time:*** | 20-30 Seconds Closure Through 90°, 0-50 in.lb. (0-5.6 Nm) |
| ***Auxiliary Switches:*** | **Models Ending in 20S or 80S:** 2 Mechanical, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 1 Amp Resistive, 24VAC or 5 Amp Resistive, 250VAC Depending upon the Model |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V |
| ***GearTrain Enclosure:*** | Die Cast Zinc with a Steel Base |

# B Series (slow motion low voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for low voltage applications* | | | | | | | | | | | | | | | |
| **BT000S** (BBTS1000) | 24VAC 30VDC | 6VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | | | $ 137 |
| **BT005S** (BBTS1005) | 24VAC 30VDC | 6VA | 6VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | | | $ 198 |
| **BT020S** (BBTS1021) | 24VAC 30VDC | 6VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | | ◆ | $ 198 |
| **BT060S** (BBTS1060) | 24VAC 30VDC | 15VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | | $ 264 |
| **BT065S** (BBTS1065) | 24VAC 30VDC | 15VA | 6VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | ◆ | | $ 318 |
| **BT080S** (BBTS1080) | 24VAC 30VDC | 15VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | ◆ | $ 324 |
| **BT400S** (BBTS24 A) | 24VAC | 3VA | 3VA | | ◆ | | | | 180 to 220 | | | | | | $ 160 |
| **BT405S** (BBTS24 AP) | 24VAC | 3VA | 3VA | | ◆ | | | | 180 to 220 | ◆ | | | | | $ 215 |
| **BT420S** (BBTS24 AAX) | 24VAC | 3VA | 3VA | | ◆ | | | | 180 to 220 | | | | | ◆ | $ 220 |
| **BT800S** (BBTS1800) | 48VDC | 4 watts | 4 watts | ◆ | ◆ | | | | 90 to 110 | | | | | | $ 182 |
| **BT805S** | 48VDC | 4 watts | 4 watts | ◆ | ◆ | | | | 90 to 110 | ◆ | | | | | $ 236 |
| **BT820S** | 48VDC | 4 watts | 4 watts | ◆ | ◆ | | | | 90 to 110 | | | | | ◆ | $ 242 |
| **BT860S** (BBTS1860) | 48VDC | 4 watts | 4 watts | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | | $ 297 |
| **BT865S** | 48VDC | 12 watts | 4 watts | ◆ | ◆ | | | | 90 to 110 | ◆ | | | ◆ | | $ 351 |
| **BT880S** | 48VDC | 12 watts | 4 watts | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | ◆ | $ 357 |
| **BM000S** (BBMS2000) | 24VAC 30VDC | 6VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | | | $ 188 |
| **BM020S** (BBMS2021) | 24VAC 30VDC | 6VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | | ◆ | $ 247 |
| **BM060S** (BBMS2060) | 24VAC 30VDC | 15VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | | $ 307 |
| **BM080S** (BBMS2080) | 24VAC 30VDC | 15VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | ◆ | $ 368 |
| **BM800S** (BBMS2800) | 48VDC | 6 watts | 6 watts | | | ◆ | ◆ | | 90 to 110 | | | | | | $ 220 |
| **BM820S** (BBMS2821) | 48VDC | 6 watts | 6 watts | | | ◆ | ◆ | | 90 to 110 | | | | | ◆ | $ 280 |
| **BM860S** (BBMS2860) | 48VDC | 20 watts | 6 watts | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | | $ 318 |
| **BM880S** (BBMS2880) | 48VDC | 20 watts | 6 watts | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | ◆ | $ 379 |

**Note:** **All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008**

# B Series Actuator (slow motion line voltage)

neptronic®

### *50 in.lb. (5.6 Nm) torque*

**PRIMARY USES FOR THESE ACTUATORS**

- small dampers
- VAV box control
- unit ventilators
- fan coils
- 1/4 turn valves

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 120VAC or 240VAC Depending upon the Model |
| ***Power Consumption:*** | Peak at Start-up: 6VA to 20VA at Line Voltage Depending upon the Model<br>Operating at Full Load: 6VA at Line Voltage |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | 5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (BT):**<br>2 Wire or 3 Wire 2 Position and 3 Wire or 4 Wire 3 Point Floating Depending upon the Model<br>**Analog (BM):**<br>A) 2-10VDC; or B) 4-20mA |
| ***Torque:*** | **50 in.lb. (5.6 Nm) at Rated Voltage** |
| ***Direction & Time of Rotation:*** | Reversible, 90 Sec. to 110 Sec. / 0-50 in.lb. (0-5.6 Nm) |
| ***Ambient Temperature:*** | -22°F to +122°F (-30°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (BTXX5S):** Potentiometer (5 Kohms) |
| ***Fail Safe (Enerdrive) Rating:*** | **Models Ending in 60S, 65S or 80S:** 50 in.lb. (5.6 Nm) |
| ***Enerdrive Response Time:*** | 20-30 Seconds Closure Through 90°, 0-50 in.lb. (0-5.6 Nm) |
| ***Auxiliary Switches:*** | **Models Ending in 20S or 80S:** 2 Mechanical, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 1 Amp Resistive, 24VAC or 5 Amp Resistive, 250VAC Depending upon the Model |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V |
| ***GearTrain Enclosure:*** | Die Cast Zinc with a Steel Base |

# B Series (slow motion line voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for line voltage applications* | | | | | | | | | | | | | | | |
| **BT100S** | 120VAC | 6VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | | | $ 165 |
| **BT105S** | 120VAC | 6VA | 6VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | | | $ 220 |
| **BT120S** | 120VAC | 6VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | | ◆ | $ 226 |
| **BT160S** | 120VAC | 20VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | | $ 297 |
| **BT165S** | 120VAC | 20VA | 6VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | ◆ | | $ 351 |
| **BT180S** | 120VAC | 20VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | ◆ | $ 357 |
| **BT200S** | 240VAC | 6VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | | | $ 165 |
| **BT205S** | 240VAC | 6VA | 6VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | | | $ 274 |
| **BT220S** | 240VAC | 6VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | | ◆ | $ 226 |
| **BT260S** | 240VAC | 20VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | | $ 297 |
| **BT265S** | 240VAC | 20VA | 6VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | ◆ | | $ 351 |
| **BT280S** | 240VAC | 20VA | 6VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | ◆ | $ 357 |
| **BM100S** | 120VAC | 6VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | | | $ 242 |
| **BM160S** | 120VAC | 20VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | | $ 340 |
| **BM200S** | 240VAC | 6VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | | | $ 242 |
| **BM260S** | 240VAC | 20VA | 6VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | | $ 340 |

# S Series Actuator (slow motion low voltage)

neptronic®

*70 in.lb. (8 Nm) torque*

**PRIMARY USES FOR THESE ACTUATORS**

- small dampers
- VAV box control
- unit ventilators
- fan coils
- 1/4 turn valves

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/30VDC |
| ***Power Consumption:*** | Peak at Start-up: 8VA to 20VA at 26VAC Depending upon the Model<br>Operating at Full Load: 8VA at 26VAC |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | 5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (ST):**<br>2 Wire or 3 Wire 2 Position and 4 Wire 3 Point Floating Depending upon the Model<br>**Analog (SM):**<br>A) 2-10VDC; or B) 4-20mA |
| ***Torque:*** | **70 in.lb. (8 Nm) at Rated Voltage** |
| ***Direction & Time of Rotation:*** | Reversible, 90 to 110 Sec. / 0-70 in.lb. (0-8 Nm) |
| ***Ambient Temperature:*** | -22°F to +122°F (-30°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (STXX5S):** Potentiometer (5 Kohms) |
| ***Fail Safe (Enerdrive) Rating:*** | **Models Ending in 60S, 65S or 80S:** 70 in.lb. (8 Nm) |
| ***Enerdrive Response Time:*** | 20-30 Seconds Closure Through 90°, 0-70 in.lb. (0-8 Nm) |
| ***Auxiliary Switches:*** | **Models Ending in 20S or 80S:** 2 Mechanical, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 1 Amp Resistive, 24VAC or 5 Amp Resistive, 250VAC Depending upon the Model |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V |
| ***GearTrain Enclosure:*** | Die Cast Zinc with a Steel Base |

# S Series (low voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for low voltage applications* | | | | | | | | | | | | | | | |
| **ST000S** | 24VAC 30VDC | 8VA | 8VA | ◆ | ◆ | | | | 90 to 110 | | | | | | $ 155 |
| **ST005S** | 24VAC 30VDC | 8VA | 8VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | | | $ 209 |
| **ST020S** | 24VAC 30VDC | 8VA | 8VA | ◆ | ◆ | | | | 90 to 110 | | | | | ◆ | $ 215 |
| **ST060S** | 24VAC 30VDC | 20VA | 8VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | | $ 280 |
| **ST065S** | 24VAC 30VDC | 20VA | 8VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | ◆ | | $ 335 |
| **ST080S** | 24VAC 30VDC | 20VA | 8VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | ◆ | $ 340 |
| **SM000S** | 24VAC 30VDC | 8VA | 8VA | | | ◆ | ◆ | | 90 to 110 | | | | | | $ 242 |
| **SM020S** | 24VAC 30VDC | 8VA | 8VA | | | ◆ | ◆ | | 90 to 110 | | | | | ◆ | $ 302 |
| **SM060S** | 24VAC 30VDC | 20VA | 8VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | | $ 340 |
| **SM080S** | 24VAC 30VDC | 20VA | 8VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | ◆ | $ 400 |

# S Series Actuator (slow motion line voltage)

neptronic®

### *70 in.lb. (8 Nm) torque*

**PRIMARY USES FOR THESE ACTUATORS**

- small dampers
- VAV box control
- unit ventilators
- fan coils
- 1/4 turn valves

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 120VAC or 240VAC Depending upon the Model |
| ***Power Consumption:*** | Peak at Start-up: 8VA to 20VA at Line Voltage Depending upon the Model<br>Operating at Full Load: 8VA at Line Voltage |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | 5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (ST):**<br>2 Wire or 3 Wire 2 Position and 4 Wire 3 Point Floating Depending upon the Model<br>**Analog (SM):**<br>A) 2-10VDC; or B) 4-20mA |
| ***Torque:*** | **70 in.lb. (8 Nm) at Rated Voltage** |
| ***Direction & Time of Rotation:*** | Reversible, 90 to 110 Sec. / 0-70 in.lb. (0-8 Nm) |
| ***Ambient Temperature:*** | -22°F to +122°F (-30°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (STXX5S):** Potentiometer (5 Kohms) |
| ***Fail Safe (Enerdrive) Rating:*** | **Models Ending in 60S, 65S or 80S:** 70 in.lb. (8 Nm) |
| ***Enerdrive Response Time:*** | 20-30 Seconds Closure Through 90°, 0-70 in.lb. (0-8 Nm) |
| ***Auxiliary Switches:*** | **Models Ending in 20S or 80S:** 2 Mechanical, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 1 Amp Resistive, 24VAC or 5 Amp Resistive, 250VAC Depending upon the Model |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V |
| ***GearTrain Enclosure:*** | Die Cast Zinc with a Steel Base |

# S Series (line voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for line voltage applications* | | | | | | | | | | | | | | | |
| **ST100S** | 120VAC | 8VA | 8VA | ◆ | ◆ | | | | 90 to 110 | | | | | | $ 170 |
| **ST105S** | 120VAC | 8VA | 8VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | | | $ 226 |
| **ST120S** | 120VAC | 8VA | 8VA | ◆ | ◆ | | | | 90 to 110 | | | | | ◆ | $ 231 |
| **ST160S** | 120VAC | 20VA | 8VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | | $ 318 |
| **ST165S** | 120VAC | 20VA | 8VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | ◆ | | $ 373 |
| **ST180S** | 120VAC | 20VA | 8VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | ◆ | $ 379 |
| **ST200S** | 240VAC | 8VA | 8VA | ◆ | ◆ | | | | 90 to 110 | | | | | | $ 170 |
| **ST205S** | 240VAC | 8VA | 8VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | | | $ 226 |
| **ST220S** | 240VAC | 8VA | 8VA | ◆ | ◆ | | | | 90 to 110 | | | | | ◆ | $ 231 |
| **ST260S** | 240VAC | 20VA | 8VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | | $ 318 |
| **ST265S** | 240VAC | 20VA | 8VA | ◆ | ◆ | | | | 90 to 110 | ◆ | | | ◆ | | $ 373 |
| **ST280S** | 240VAC | 20VA | 8VA | ◆ | ◆ | | | | 90 to 110 | | | | ◆ | ◆ | $ 379 |
| **SM100S** | 120VAC | 8VA | 8VA | | | ◆ | ◆ | | 90 to 110 | | | | | | $ 264 |
| **SM160S** | 120VAC | 20VA | 8VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | | $ 362 |
| **SM200S** | 240VAC | 8VA | 8VA | | | ◆ | ◆ | | 90 to 110 | | | | | | $ 264 |
| **SM260S** | 240VAC | 20VA | 8VA | | | ◆ | ◆ | | 90 to 110 | | | | ◆ | | $ 362 |

# L Series Actuator

neptronic®

*140 in.lb. (16 Nm) torque*

**PRIMARY USES FOR THESE ACTUATORS**

- small size air handler dampers
- zone dampers
- 1/4 turn valves

These quarter turn actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in digital models and electronically in Multi Signal models.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/30VDC, 120VAC/240VAC or 24VAC/120VAC/240VAC Depending upon the Model |
| ***Power Consumption:*** | Peak at Start-up: 5VA to 30VA at 26VAC Depending upon the Model<br>8VA to 35VA at Line Voltage Depending upon the Model<br>Operating at Full Load: 5VA to 8VA at 26VAC Depending upon the Model<br>8VA to 10VA at Line Voltage Depending upon the Model |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (LT):**<br>2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model<br>**Multi Signal (LM):**<br>**ANALOG:** A) 2-10VDC; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable<br>**PULSE WIDTH MODULATION:** Time Base of 0.1 - 5 Seconds/20mS Resolution or 0.1 - 25 Seconds/100mS Resolution Selected by Dip Switch Position<br>SWITCH 24VAC: Triac or Dry Contact, 40mA Max. Switching Current<br>SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current<br>**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating |
| ***Torque:*** | **140 in.lb. (16 Nm) at Rated Voltage** |
| ***Direction & Time of Rotation:*** | Reversible, 60-85 Sec. / 0-140 in.lb. (0-16 Nm) |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (LTXX5):** Voltage (0 to 12VDC max)<br>**In Multi Signal (LM):** 4-20mA Output (May be wired for a 2-10VDC signal) |
| ***Fail Safe (Enerdrive) Rating:*** | **Models Ending in 60, 65 or 80:** 140 in.lb. (16 Nm) |
| ***Enerdrive Response Time:*** | 60-85 seconds closure through 90°, 0-140 in.lb. (0-16 Nm) |
| ***Auxiliary Switches:*** | **Models Ending in 20 or 80:** 2 Mechanical Switches, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 5 Amp Resistive, 250VAC |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V<br>**Option W:** IP65 equivalent to Nema type 4 enclosure with special protection against chemicals |

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for low voltage applications* | | | | | | | | | | | | | | | |
| **LT000** (LDT3000 A) | 24VAC 30VDC | 5VA | 5VA | ◆ | ◆ | | | | 60 to 85 | | | | | | $ 215 |
| **LT005** (LDT3005 A) | 24VAC 30VDC | 5VA | 5VA | ◆ | ◆ | | | | 60 to 85 | ◆ | | | | | $ 269 |
| **LT020** (LDT3021 A) | 24VAC 30VDC | 5VA | 5VA | ◆ | ◆ | | | | 60 to 85 | | | | | ◆ | $ 274 |
| **LT060** (LDT3060 A) | 24VAC 30VDC | 30VA | 5VA | ◆ | ◆ | | | | 60 to 85 | | | | ◆ | | $ 406 |
| **LT065** (LDT3065 A) | 24VAC 30VDC | 30VA | 5VA | ◆ | ◆ | | | | 60 to 85 | ◆ | | | ◆ | | $ 460 |
| **LT080** (LDT3080 A) | 24VAC 30VDC | 30VA | 5VA | ◆ | ◆ | | | | 60 to 85 | | | | ◆ | ◆ | $ 466 |
| **LM000** (LDM4000 A) | 24VAC 30VDC | 8VA | 8VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | | | $ 297 |
| **LM020** (LDM4021 A) | 24VAC 30VDC | 8VA | 8VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | | ◆ | $ 357 |
| **LM060** (LDM4060 A) | 24VAC 30VDC | 30VA | 8VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | ◆ | | $ 455 |
| **LM080** (LDM4080 A) | 24VAC 30VDC | 30VA | 8VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | ◆ | ◆ | $ 515 |
| *for line voltage applications* | | | | | | | | | | | | | | | |
| **LT300** (LDTHV3300 A) | 120VAC 240VAC | 8VA | 8VA | ◆ | ◆ | | | | 60 to 85 | | | | | | $ 274 |
| **LT305** (LDTHV3305 A) | 120VAC 240VAC | 8VA | 8VA | ◆ | ◆ | | | | 60 to 85 | ◆ | | | | | $ 329 |
| **LT320** (LDTHV3321 A) | 120VAC 240VAC | 8VA | 8VA | ◆ | ◆ | | | | 60 to 85 | | | | | ◆ | $ 335 |
| **LT360** (LDTHV3360 A) | 120VAC 240VAC | 35VA | 8VA | ◆ | ◆ | | | | 60 to 85 | | | | ◆ | | $ 455 |
| **LT365** (LDTHV3365 A) | 120VAC 240VAC | 35VA | 8VA | ◆ | ◆ | | | | 60 to 85 | ◆ | | | ◆ | | $ 509 |
| **LT380** (LDTHV3380 A) | 120VAC 240VAC | 35VA | 8VA | ◆ | ◆ | | | | 60 to 85 | | | | ◆ | ◆ | $ 515 |
| **LM300** (LDMHV4300 A) | 24VAC 30VDC 120VAC 240VAC | 10VA | 10VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | | | $ 346 |
| **LM320** (LDMHV4321 A) | 24VAC 30VDC 120VAC 240VAC | 10VA | 10VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | | ◆ | $ 406 |
| **LM360** (LDMHV4360 A) | 24VAC 30VDC 120VAC 240VAC | 30VA | 10VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | ◆ | | $ 504 |
| **LM380** (LDMHV4380 A) | 24VAC 30VDC 120VAC 240VAC | 30VA | 10VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | ◆ | ◆ | $ 564 |

**Note:** **All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008**

# T Series Actuator (low voltage)

neptronic®

*180 in.lb. (20 Nm) torque*

**PRIMARY USES FOR THESE ACTUATORS**

- medium size air handler dampers
- 1/4 turn valves
- 1/4 turn valves

These quarter turn actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in digital models and electronically in Multi Signal models.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/30VDC |
| ***Power Consumption:*** | Peak at Start-up: 8VA to 40VA at 26VAC Depending upon the Model<br>Operating at Full Load: 8VA to 15VA at 26VAC Depending upon the Model |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (TT):**<br>2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model<br>**Multi Signal (TM):**<br>**ANALOG:** A) 2-10VDC; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable<br>**PULSE WIDTH MODULATION:** Time Base of 0.1 - 5 Seconds/20mS Resolution or 0.1 - 25 Seconds/100mS Resolution Selected by Dip Switch Position<br>SWITCH 24VAC: Triac or Dry Contact, 40mA Max. Switching Current<br>SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current<br>**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating |
| ***Torque:*** | **180 in.lb. (20 Nm) at Rated Voltage** |
| ***Direction & Time of Rotation:*** | Reversible, 40-50 Sec. or 60-85 Sec. / 0-180 in.lb. (0-20 Nm) Depending upon the Model |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (TTXX5):** Voltage (0 to 12VDC max)<br>**In Multi Signal (TM):** 4-20mA Output (May be wired for a 2-10VDC signal) |
| ***Fail Safe (Enerdrive) Rating:*** | **Models Ending in 60, 65, 80, 60N or 80N:** 180 in.lb. (20 Nm) |
| ***Enerdrive Response Time:*** | 60-85 seconds closure through 90°, 0-180 in.lb. (0 - 20 Nm) |
| ***Auxiliary Switches:*** | **Models Ending in 20, 80, 20N, or 80N:** 2 Mechanical Switches, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 5 Amp Resistive, 250VAC |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V<br>**Option W:** IP65 equivalent to Nema type 4 enclosure with special protection against chemicals |

# T Series (low voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for low voltage applications* | | | | | | | | | | | | | | | |
| **TT000** (TBT3000 A) | 24VAC 30VDC | 8VA | 8VA | ◆ | ◆ | | | | 60 to 85 | | | | | | $ 247 |
| **TT005** (TBT3005 A) | 24VAC 30VDC | 8VA | 8VA | ◆ | ◆ | | | | 60 to 85 | ◆ | | | | | $ 308 |
| **TT020** (TBT3021 A) | 24VAC 30VDC | 8VA | 8VA | ◆ | ◆ | | | | 60 to 85 | | | | | ◆ | $ 308 |
| **TT060** (TBT3060 A) | 24VAC 30VDC | 24VA | 8VA | ◆ | ◆ | | | | 60 to 85 | | | | ◆ | | $ 497 |
| **TT065** (TBT3065 A) | 24VAC 30VDC | 24VA | 8VA | ◆ | ◆ | | | | 60 to 85 | ◆ | | | ◆ | | $ 558 |
| **TT080** (TBT3080 A) | 24VAC 30VDC | 24VA | 8VA | ◆ | ◆ | | | | 60 to 85 | | | | ◆ | ◆ | $ 558 |
| **TM000** (TBM4000 A) | 24VAC 30VDC | 8VA | 8VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | | | $ 347 |
| **TM020** (TBM4021 A) | 24VAC 30VDC | 8VA | 8VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | | ◆ | $ 407 |
| **TM060** (TBM4060 A) | 24VAC 30VDC | 30VA | 8VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | ◆ | | $ 575 |
| **TM080** (TBM4080 A) | 24VAC 30VDC | 30VA | 8VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | ◆ | ◆ | $ 637 |
| **TM000N** (TBM4000 NA) | 24VAC 30VDC | 15VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | | | $ 492 |
| **TM020N** (TBM4021 NA) | 24VAC 30VDC | 15VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | | ◆ | $ 553 |
| **TM060N** (TBM4060 NA) | 24VAC 30VDC | 40VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | ◆ | | $ 765 |
| **TM080N** (TBM4080 NA) | 24VAC 30VDC | 40VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | ◆ | ◆ | $ 827 |

**Note:** **All actuators are powered by brush motors except those ending with the letter "N"**
**All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008**

# T Series Actuator (line voltage)

neptronic®

*180 in.lb. (20 Nm) torque*

**PRIMARY USES FOR THESE ACTUATORS**

- medium size air handler dampers
- 1/4 turn valves

These quarter turn actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in digital models and electronically in Multi Signal models.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 120VAC/240VAC or 24VAC/120VAC/240VAC Depending upon the Model |
| ***Power Consumption:*** | Peak at Start-up: 10VA to 45VA at Line Voltage Depending upon the Model<br>Operating at Full Load: 10VA to 20VA at Line Voltage Depending upon the Model |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (TT):**<br>2 Wire or 3 Wire 2 Position and/or 4 Wire 3 Point Floating Depending upon the Model<br>**Multi Signal (TM):**<br>**ANALOG:** A) 2-10VDC; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable<br>**PULSE WIDTH MODULATION:** Time Base of 0.1 - 5 Seconds/20mS Resolution or 0.1 - 25 Seconds/100mS Resolution Selected by Dip Switch Position<br>SWITCH 24VAC: Triac or Dry Contact, 40mA Max. Switching Current<br>SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current<br>**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating |
| ***Torque:*** | **180 in.lb. (20 Nm) at Rated Voltage** |
| ***Direction & Time of Rotation:*** | Reversible, 40-50 Sec. or 60-85 Sec. / 0-180 in.lb. (0-20 Nm) Depending upon the Model |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (TTXX5):** Voltage (0 to 12VDC max)<br>**In Multi Signal (TM):** 4-20mA Output (May be wired for a 2-10VDC signal) |
| ***Fail Safe (Enerdrive) Rating:*** | **Models Ending in 60, 65, 80 or 60N:** 180 in.lb. (20 Nm) |
| ***Enerdrive Response Time:*** | 60-85 seconds closure through 90°, 0-180 in.lb. (0 - 20 Nm) |
| ***Auxiliary Switches:*** | **Models Ending in 20, 80 or 20N:** 2 Mechanical Switches, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 5 Amp Resistive, 250VAC |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V<br>**Option W:** IP65 equivalent to Nema type 4 enclosure with special protection against chemicals |

# T Series (line voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for line voltage applications* | | | | | | | | | | | | | | | |
| **TT300** (TBTHV3300 A) | 120VAC 240VAC | 10VA | 10VA | ◆ | ◆ | | | | 60 to 85 | | | | | | $ 324 |
| **TT305** (TBTHV3305 A) | 120VAC 240VAC | 10VA | 10VA | ◆ | ◆ | | | | 60 to 85 | ◆ | | | | | $ 386 |
| **TT320** (TBTHV3321 A) | 120VAC 240VAC | 10VA | 10VA | ◆ | ◆ | | | | 60 to 85 | | | | | ◆ | $ 386 |
| **TT360** (TBTHV3360 A) | 120VAC 240VAC | 30VA | 10VA | ◆ | ◆ | | | | 60 to 85 | | | | ◆ | | $ 553 |
| **TT365** (TBTHV3365 A) | 120VAC 240VAC | 30VA | 10VA | ◆ | ◆ | | | | 60 to 85 | ◆ | | | ◆ | | $ 614 |
| **TT380** (TBTHV3380 A) | 120VAC 240VAC | 30VA | 10VA | ◆ | ◆ | | | | 60 to 85 | | | | ◆ | ◆ | $ 614 |
| **TM300** (TBMHV4300 A) | 24VAC 30VDC 120VAC 240VAC | 10VA | 10VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | | | $ 402 |
| **TM320** (TBMHV4321 A) | 24VAC 30VDC 120VAC 240VAC | 10VA | 10VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | | ◆ | $ 464 |
| **TM360** (TBMHV4360 A) | 24VAC 30VDC 120VAC 240VAC | 30VA | 10VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | ◆ | | $ 698 |
| **TM380** (TBMHV4380 A) | 24VAC 30VDC 120VAC 240VAC | 30VA | 10VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | ◆ | ◆ | $ 760 |
| **TM300N** (TBMHV4300 NA) | 24VAC 30VDC 120VAC 240VAC | 20VA | 20VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | | | $ 631 |
| **TM320N** (TBMHV4321 NA) | 24VAC 30VDC 120VAC 240VAC | 20VA | 20VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | | ◆ | $ 692 |
| **TM360N** (TBMHV4360 NA) | 24VAC 30VDC 120VAC 240VAC | 45VA | 20VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | ◆ | | $ 904 |

**Note:** **All actuators are powered by brush motors except those ending with the letter "N"**
**All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008**

# R Series Actuator (low voltage)

neptronic®

*360 in.lb. (40 Nm) torque*

**PRIMARY USES FOR THESE ACTUATORS**

- large size air handler dampers
- 1/4 turn valves

These quarter turn actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in di-gital models and electronically in Multi Signal models.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/30VDC |
| ***Power Consumption:*** | Peak at Start-up: 10VA to 40VA at 26VAC Depending upon the Model<br>Operating at Full Load: 10VA to 24VA at 26VAC Depending upon the Model |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (RT):**<br>2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model<br>**Multi Signal (RM):**<br>**ANALOG:** A) 2-10VDC; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable<br>**PULSE WIDTH MODULATION:** Time Base of 0.1 - 5 Seconds/20mS Resolution or 0.1 - 25 Seconds/100mS Resolution Selected by Dip Switch Position<br>SWITCH 24VAC: Triac or Dry Contact, 40mA Max. Switching Current<br>SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current<br>**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating |
| ***Torque:*** | **360 in.lb. (40 Nm) at Rated Voltage** |
| ***Direction & Time of Rotation:*** | Reversible, 40-50 Sec. or 60-85 Sec. / 0-360 in.lb. (0-40 Nm) Depending upon the Model |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (RTXX5):** Voltage (0 to 12VDC max)<br>**In Multi Signal (RM):** 4-20mA Output (May be wired for a 2-10VDC signal) |
| ***Fail Safe (Enerdrive) Rating:*** | **Models Ending in 60, 65, 80, 60N or 80N:** 360 in.lb. (40 Nm) |
| ***Enerdrive Response Time:*** | 60-85 seconds closure through 90°, 0-360 in.lb. (0-40 Nm) |
| ***Auxiliary Switches:*** | **Models Ending in 20, 80, 20N or 80N:** 2 Mechanical Switches, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 5 Amp Resistive, 250VAC |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V<br>**Option W:** IP65 equivalent to Nema type 4 enclosure with special protection against chemicals |

# R Series (low voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for low voltage applications* | | | | | | | | | | | | | | | |
| **RT000** (RBT5000 A) | 24VAC 30VDC | 10VA | 10VA | ◆ | ◆ | | | | 60 to 85 | | | | | | $ 381 |
| **RT005** (RBT5005 A) | 24VAC 30VDC | 10VA | 10VA | ◆ | ◆ | | | | 60 to 85 | ◆ | | | | | $ 441 |
| **RT020** (RBT5021 A) | 24VAC 30VDC | 10VA | 10VA | ◆ | ◆ | | | | 60 to 85 | | | | | ◆ | $ 441 |
| **RT060** (RBT5060 A) | 24VAC 30VDC | 24VA | 10VA | ◆ | ◆ | | | | 60 to 85 | | | | ◆ | | $ 865 |
| **RT065** (RBT5065 A) | 24VAC 30VDC | 24VA | 10VA | ◆ | ◆ | | | | 60 to 85 | ◆ | | | ◆ | | $ 920 |
| **RT080** (RBT5080 A) | 24VAC 30VDC | 24VA | 10VA | ◆ | ◆ | | | | 60 to 85 | | | | ◆ | ◆ | $ 925 |
| **RM000** (RBM6000 A) | 24VAC 30VDC | 10VA | 10VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | | | $ 446 |
| **RM020** (RBM6021 A) | 24VAC 30VDC | 10VA | 10VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | | ◆ | $ 508 |
| **RM060** (RBM6060 A) | 24VAC 30VDC | 30VA | 10VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | ◆ | | $ 909 |
| **RM080** (RBM6080 A) | 24VAC 30VDC | 30VA | 10VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | ◆ | ◆ | $ 971 |
| **RM000N** (RBM6000 NA) | 24VAC 30VDC | 24VA | 24VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | | | $ 565 |
| **RM020N** (RBM6021 NA) | 24VAC 30VDC | 24VA | 24VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | | ◆ | $ 625 |
| **RM060N** (RBM6060 NA) | 24VAC 30VDC | 40VA | 24VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | ◆ | | $ 987 |
| **RM080N** (RBM6080 NA) | 24VAC 30VDC | 40VA | 24VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | ◆ | ◆ | $ 1,049 |

**Note:** **All actuators are powered by brush motors except those ending with the letter "N"**
**All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008**

# R Series Actuator (line voltage)

neptronic®

*360 in.lb. (40 Nm) torque*

**PRIMARY USES FOR THESE ACTUATORS**

- large size air handler dampers
- 1/4 turn valves

These quarter turn actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in di-gital models and electronically in Multi Signal models.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 120VAC/240VAC or 24VAC/120VAC/240VAC Depending upon the Model |
| ***Power Consumption:*** | Peak at Start-up: 14VA to 50VA at Line Voltage Depending upon the Model<br>Operating at Full Load: 14VA to 30VA at Line Voltage Depending upon the Model |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (RT):**<br>2 Wire or 3 Wire 2 Position and/or 4 Wire 3 Point Floating Depending upon the Model<br>**Multi Signal (RM):**<br>**ANALOG:** A) 2-10VDC; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable<br>**PULSE WIDTH MODULATION:** Time Base of 0.1 - 5 Seconds/20mS Resolution or 0.1 - 25 Seconds/100mS Resolution Selected by Dip Switch Position<br>SWITCH 24VAC: Triac or Dry Contact, 40mA Max. Switching Current<br>SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current<br>**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating |
| ***Torque:*** | **360 in.lb. (40 Nm) at Rated Voltage** |
| ***Direction & Time of Rotation:*** | Reversible, 40-50 Sec. or 60-85 Sec. / 0-360 in.lb. (0-40 Nm) Depending upon the Model |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (RTXX5):** Voltage (0 to 12VDC max)<br>**In Multi Signal (RM):** 4-20mA Output (May be wired for a 2-10VDC signal) |
| ***Fail Safe (Enerdrive) Rating:*** | **Models Ending in 60, 65, 80 or 60N:** 360 in.lb. (40 Nm) |
| ***Enerdrive Response Time:*** | 60-85 seconds closure through 90°, 0-360 in.lb. (0-40 Nm) |
| ***Auxiliary Switches:*** | **Models Ending in 20, 80 or 20N:** 2 Mechanical Switches, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 5 Amp Resistive, 250VAC |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V<br>**Option W:** IP65 equivalent to Nema type 4 enclosure with special protection against chemicals |

# R Series (line voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for line voltage applications* | | | | | | | | | | | | | | | |
| **RT300** (RBTHV5300 A) | 120VAC 240VAC | 14VA | 14VA | ◆ | ◆ | | | | 60 to 85 | | | | | | $ 436 |
| **RT305** (RBTHV5305 A) | 120VAC 240VAC | 14VA | 14VA | ◆ | ◆ | | | | 60 to 85 | ◆ | | | | | $ 492 |
| **RT320** (RBTHV5321 A) | 120VAC 240VAC | 14VA | 14VA | ◆ | ◆ | | | | 60 to 85 | | | | | ◆ | $ 497 |
| **RT360** (RBTHV5360 A) | 120VAC 240VAC | 30VA | 14VA | ◆ | ◆ | | | | 60 to 85 | | | | ◆ | | $ 915 |
| **RT365** (RBTHV5365 A) | 120VAC 240VAC | 30VA | 14VA | ◆ | ◆ | | | | 60 to 85 | ◆ | | | ◆ | | $ 977 |
| **RT380** (RBTHV5380 A) | 120VAC 240VAC | 30VA | 14VA | ◆ | ◆ | | | | 60 to 85 | | | | ◆ | ◆ | $ 977 |
| **RM300** (RBMHV6300 A) | 24VAC 30VDC 120VAC 240VAC | 14VA | 14VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | | | $ 519 |
| **RM320** (RBMHV6321 A) | 24VAC 30VDC 120VAC 240VAC | 14VA | 14VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | | ◆ | $ 637 |
| **RM360** (RBMHV6360 A) | 24VAC 30VDC 120VAC 240VAC | 30VA | 14VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | ◆ | | $ 959 |
| **RM380** (RBMHV6380 A) | 24VAC 30VDC 120VAC 240VAC | 30VA | 14VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 to 85 | ◆ | ◆ | ◆ | ◆ | ◆ | $ 1,076 |
| **RM300N** (RBMHV6300 NA) | 24VAC 30VDC 120VAC 240VAC | 30VA | 30VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | | | $ 703 |
| **RM320N** (RBMHV6321 NA) | 24VAC 30VDC 120VAC 240VAC | 30VA | 30VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | | ◆ | $ 765 |
| **RM360N** (RBMHV6360 NA) | 24VAC 30VDC 120VAC 240VAC | 50VA | 30VA | ◆ | ◆ | ◆ | ◆ | ◆ | 40 to 50 | ◆ | ◆ | ◆ | ◆ | | $ 1,071 |

**Note:** **All actuators are powered by brush motors except those ending with the letter "N"**
**All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008**

# U & W Series Actuator (low voltage)

neptronic®

***1800 in.lb. (200 Nm) torque***
***to***
***4000 in.lb. (450 Nm) torque***

**PRIMARY USES FOR THESE ACTUATORS**

- ◆ fan vortex dampers
- ◆ large damper sections
- ◆ 1/4 turn valves
- ◆ inlet guide vanes

These microprocessor based, low voltage actuators are encased in a sturdy cast aluminum, weather tight enclosure. All actuators are bi-directional. The actuators with the fail safe option are also bi-directional in the event of a power failure. The stroke may be electronically limited to less than 110°. Factory installed auxiliary switches, UBAUX2, and a remote mounting kit, UBARM & ELUB, are available. Refer to Actuator Accessories.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/30VDC |
| ***Power Consumption:*** | Peak at Start-up: 40VA to 100VA at 26VAC Depending upon the Model<br>Operating at Full Load: 40VA to 100VA at 26VAC Depending upon the Model |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | Three 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (UT & WT):**<br>4 Wire 2 Position or 5 Wire 3 Point Floating<br>**Multi Signal (UM & WM):**<br>**ANALOG:** A) 2-10VDC; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable<br>**PULSE WIDTH MODULATION:** Time Base of 0.1 - 5 Seconds/20mS Resolution or 0.1 - 25 Seconds/100mS Resolution Selected by Dip Switch Position<br>SWITCH 24VAC: Triac or Dry Contact, 40mA Max. Switching Current<br>SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current<br>**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating |
| ***Torque at Rated Voltage:*** | **1800 in.lb. (200 Nm) to 4000 in.lb. (450 Nm) Depending upon the Model** |
| ***Direction & Time of Rotation:*** | Reversible, 45 Seconds to 8 Minutes Depending upon the Model |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C) |
| ***Feedback Potentiometer:*** | **On all Models:** 4-20mA Output (May be wired for a 2-10VDC signal) |
| ***Fail Safe Rating:*** | **UT010, UT030, UM010 & UM030:** 1800 in.lb. (200 Nm) & 2500 in.lb. (280 Nm)<br>**WT010, WT030, WM010 & WM030:** 3500 in.lb. (400 Nm) & 4000 in.lb. (450 Nm) |
| ***Response Time Through 90°:*** | 0 - 1800 in.lb. (0 - 200 Nm): 45 Sec., 0 - 2500 in.lb. (0 - 280 Nm): 4 Min.<br>0 - 3500 in.lb. (0 - 400 Nm): 90 Sec., 0 - 4000 in.lb. (0 - 450 Nm): 8 Min. |
| ***Battery Type:*** | 12 Volt Sealed Gel Type |
| ***Battery Rating:*** | 800 mA |
| ***Auxiliary Switches:*** | **Models Ending in 20 or 30:** 2 Mechanical Switches, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 5 Amp Resistive, 250VAC |
| ***Electronic Enclosure:*** | Cast Aluminum, IP56 equivalent to Nema type 4 enclosure |

# U & W Series (low voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Rotation Time Thru 90° Arc | Actuator Features | | | | 2 Mech. Aux. Switches | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | The Fail Safe Option | | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for applications requiring up to 1800 in.lb. (200 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **UT000** (UB8000 A) | 24VAC 30VDC | 100VA | 100VA | ◆ | ◆ | | | | 45 Sec. | ◆ | ◆ | | | | $ 2,372 |
| **UT010** (UB8030 A) | 24VAC 30VDC | 100VA | 100VA | ◆ | ◆ | | | | 45 Sec. | ◆ | ◆ | | ◆ | | $ 2,990 |
| **UT020** (UB8000 A-AUX2) | 24VAC 30VDC | 100VA | 100VA | ◆ | ◆ | | | | 45 Sec. | ◆ | ◆ | | | ◆ | $ 2,622 |
| **UT030** (UB8030 A-AUX2) | 24VAC 30VDC | 100VA | 100VA | ◆ | ◆ | | | | 45 Sec. | ◆ | ◆ | | ◆ | ◆ | $ 3,239 |
| *for applications requiring up to 2500 in.lb. (280 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **UM000** (UB8010 A) | 24VAC 30VDC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 4 Min. | ◆ | ◆ | ◆ | | | $ 2,372 |
| **UM010** (UB8040 A) | 24VAC 30VDC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 4 Min. | ◆ | ◆ | ◆ | ◆ | | $ 2,990 |
| **UM020** (UB8010 A-AUX2) | 24VAC 30VDC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 4 Min. | ◆ | ◆ | ◆ | | ◆ | $ 2,622 |
| **UM030** (UB8040 A-AUX2) | 24VAC 30VDC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 4 Min. | ◆ | ◆ | ◆ | ◆ | ◆ | $ 3,239 |
| *for applications requiring up to 3500 in.lb. (400 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **WT000** (UB9000 A) | 24VAC 30VDC | 100VA | 100VA | ◆ | ◆ | | | | 90 Sec. | ◆ | ◆ | | | | $ 2,996 |
| **WT010** (UB9030 A) | 24VAC 30VDC | 100VA | 100VA | ◆ | ◆ | | | | 90 Sec. | ◆ | ◆ | | ◆ | | $ 3,371 |
| **WT020** (UB9000 A-AUX2) | 24VAC 30VDC | 100VA | 100VA | ◆ | ◆ | | | | 90 Sec. | ◆ | ◆ | | | ◆ | $ 3,245 |
| **WT030** (UB9030 A-AUX2) | 24VAC 30VDC | 100VA | 100VA | ◆ | ◆ | | | | 90 Sec. | ◆ | ◆ | | ◆ | ◆ | $ 3,620 |
| *for applications requiring up to 4000 in.lb. (450 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **WM000** (UB9010 A) | 24VAC 30VDC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 8 Min. | ◆ | ◆ | ◆ | | | $ 2,996 |
| **WM010** (UB9040 A) | 24VAC 30VDC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 8 Min. | ◆ | ◆ | ◆ | ◆ | | $ 3,371 |
| **WM020** (UB9010 A-AUX2) | 24VAC 30VDC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 8 Min. | ◆ | ◆ | ◆ | | ◆ | $ 3,245 |
| **WM030** (UB9040 A-AUX2) | 24VAC 30VDC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 8 Min. | ◆ | ◆ | ◆ | ◆ | ◆ | $ 3,620 |

**Note:** **All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008**

# U & W Series Actuator (line voltage)

neptronic®

***2500 in.lb. (280 Nm) torque***
***to***
***4000 in.lb. (450 Nm) torque***

**PRIMARY USES FOR THESE ACTUATORS**

- ◆ fan vortex dampers
- ◆ large damper sections
- ◆ 1/4 turn valves
- ◆ inlet guide vanes

These microprocessor based, low voltage actuators are encased in a sturdy cast aluminum, weather tight enclosure.All actuators are bi-directional. The actuators with the fail safe option are also bi-directional in the event of a power failure. The stroke may be electronically limited to less than 110°. Factory installed auxiliary switches, UBAUX2, and a remote mounting kit, UBARM & ELUB, are available. Refer to Actuator Accessories.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/120VAC/240VAC |
| ***Power Consumption:*** | Peak at Start-up: 40VA at Line Voltage Depending upon the Model<br>Operating at Full Load: 40VA at Line Voltage Depending upon the Model |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | Three 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Multi Signal (UM & WM):**<br>**ANALOG:** A) 2-10VDC; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable<br>**PULSE WIDTH MODULATION:** Time Base of 0.1 - 5 Seconds/20mS Resolution or 0.1 - 25 Seconds/100mS Resolution Selected by Dip Switch Position<br>SWITCH 24VAC: Triac or Dry Contact, 40mA Max. Switching Current<br>SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current<br>**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating |
| ***Torque at Rated Voltage:*** | **2500 in.lb. (280 Nm) to 4000 in.lb. (450 Nm) Depending upon the Model** |
| ***Direction & Time of Rotation:*** | Reversible, 4 Minutes to 8 Minutes Depending upon the Model |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Multi Signal:** 4-20mA Output (May be wired for a 2-10VDC signal) |
| ***Fail Safe Rating:*** | **UM310 & UM330:** 2500 in.lb. (280 Nm)<br>**WM310 & WM330:** 4000 in.lb. (450 Nm) |
| ***Response Time Through 90°:*** | 0 - 2500 in.lb. (0 - 280 Nm): 4 Min.<br>0 - 4000 in.lb. (0 - 450 Nm): 8 Min. |
| ***Battery Type:*** | 12 Volt Sealed Gel Type |
| ***Battery Rating:*** | 800 mA |
| ***Auxiliary Switches:*** | **Models Ending in 20 or 30:** 2 Mechanical Switches, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 5 Amp Resistive, 250VAC |
| ***Electronic Enclosure:*** | Cast Aluminum, IP56 equivalent to Nema type 4 enclosure |

# U & W Series (line voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Rotation Time Thru 90° Arc | Actuator Features | | | | 2 Mech. Aux. Switches | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | The Fail Safe Option | | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *for applications requiring up to 2500 in.lb. (280 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **UM300** (UB8310 A) | 24VAC 30VDC 120VAC 240VAC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 4 Min. | ◆ | ◆ | ◆ | | | $2,496 |
| **UM310** (UB8340 A) | 24VAC 30VDC 120VAC 240VAC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 4 Min. | ◆ | ◆ | ◆ | ◆ | | $ 3,245 |
| **UM320** (UB8310 A-AUX2) | 24VAC 30VDC 120VAC 240VAC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 4 Min. | ◆ | ◆ | ◆ | | ◆ | $ 2,882 |
| **UM330** (UB8340 A-AUX2) | 24VAC 30VDC 120VAC 240VAC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 4 Min. | ◆ | ◆ | ◆ | ◆ | ◆ | $ 3,631 |
| *for applications requiring up to 4000 in.lb. (450 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **WM300** (UB9310 A) | 24VAC 30VDC 120VAC 240VAC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 8 Min. | ◆ | ◆ | ◆ | | | $ 3,245 |
| **WM310** (UB9340 A) | 24VAC 30VDC 120VAC 240VAC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 8 Min. | ◆ | ◆ | ◆ | ◆ | | $ 3,994 |
| **WM320** (UB9310 A-AUX2) | 24VAC 30VDC 120VAC 240VAC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 8 Min. | ◆ | ◆ | ◆ | | ◆ | $ 3,631 |
| **WM330** (UB9340 A-AUX2) | 24VAC 30VDC 120VAC 240VAC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 8 Min. | ◆ | ◆ | ◆ | ◆ | ◆ | $ 4,380 |

**Note:** **All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008**


- Finally a **superior** alternative to the pneumatic actuator.
- Designed for critical environments where the **speed** of the actuator is **essential**.

# Fastest Electric Damper Actuator in the World!

- For accurate **control** of air movement in laboratories and clean rooms.
- For **precise** fume hood control.
- For water source heat pump valves that require **fast opening** and **shut off**.
- For generator room dampers that require fast opening and shut off at high torque.

## PERFORMANCE RESULTS:

| | | | | | |
|---|---|---|---|---|---|
| **Time ⇨ 1.5 seconds!** | **Rotation ⇨** | 0-90$^0$ | **Torque ⇨** | 25 in. lb. (2.8Nm) |
| **Time ⇨ 3.5 seconds!** | **Rotation ⇨** | 0-90$^0$ | **Torque ⇨** | 35 in. lb. (4Nm) |
| **Time ⇨ 20 seconds!** | **Rotation ⇨** | 0-90$^0$ | **Torque ⇨** | 240 in. lb. (27Nm) |

- Accepts **digital**, **analog** and **PWM** control signals with conditioned **feedback**.
- Micro processor based with **programmable** auto stroke, zero & span.
- Easy to install, direct mount to the damper shaft or remote mount.
- Adaptable to the venturi linear flow air valves.
- Fail Safe with Enerdrive.

***Rotational speeds from 1.5 to 8 seconds for applications up to 50 in.lb. (5.6 Nm)***

**PRIMARY USES FOR THESE ACTUATORS**

- ◆ fume hood control
- ◆ stairwell pressurization
- ◆ air handler dampers

These microprocessor based actuators are designed for critical environments where the speed of the actuator is essential. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° electronically.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/30VDC |
| ***Power Consumption:*** | Peak at Start-up: 15VA to 24VA at 26VAC Depending upon the Model<br>Operating at Full Load: 15VA to 24VA at 26VAC Depending upon the Model |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | Two 7/8 in. (22.2mm) or One 5/8 in. (15.9mm) and One 7/8in. (22.2mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (BT):**<br>2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model<br>**Multi Signal:**<br>**ANALOG:** A) 2-10VDC; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable<br>**PULSE WIDTH MODULATION:** Time Base of 0.1 - 5 Seconds/20mS Resolution or 0.1 - 25 Seconds/100mS Resolution Selected by Dip Switch Position<br>SWITCH 24VAC: Triac or Dry Contact, 40mA Max. Switching Current<br>SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current<br>**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating |
| ***Torque at Rated Voltage:*** | **25 in.lb. (2.8 Nm) to 50 in.lb. (5.6 Nm) at Rated Voltage Depending upon the Model** |
| ***Direction & Time of Rotation:*** | Reversible, 1.5 to 8 Seconds Depending upon the Model |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Multi Signal (BM):** 4-20mA Output (May be wired for a 2-10VDC signal) |
| ***Fail Safe (Enerdrive) Rating:*** | **Models Ending in 60, 80 (F, FF, FN, FFN):** 25 to 50 in.lb. (2.8 to 5.6Nm) Depending upon the Model |
| ***Enerdrive Response Time:*** | 1.5 to 20 Seconds Closure Through 90°, Depending upon the Model |
| ***Auxiliary Switches:*** | **Models Ending in 20 or 80 (F, FF, FN, FFN):** 2 Mechanical Switches, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 5 Amp Resistive, 250VAC |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V |

# Fast (25 to 50 in.lb. torque) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| ***25 in.lb. (2.8 Nm.) torque at rated voltage*** | | | | | | | | | | | | | | | |
| **BM000FF** (BBMFF2000 A) | 24VAC 30VDC | 15VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 1.5 to 2.5 | ◆ | ◆ | ◆ | | | $ 324 |
| **BM020FF** (BBMFF2021 A) | 24VAC 30VDC | 15VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 1.5 to 2.5 | ◆ | ◆ | ◆ | | ◆ | $ 384 |
| **BM060FF** (BBMFF2060 A) | 24VAC 30VDC | 24VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 1.5 to 2.5 | ◆ | ◆ | ◆ | ◆ | | $ 422 |
| **BM080FF** (BBMFF2080 A) | 24VAC 30VDC | 24VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 1.5 to 2.5 | ◆ | ◆ | ◆ | ◆ | ◆ | $ 483 |
| ***35 in.lb. (4 Nm.) torque at rated voltage*** | | | | | | | | | | | | | | | |
| **BM000F** (BBMF2000 A) | 24VAC 30VDC | 15VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 3.5 to 4.5 | ◆ | ◆ | ◆ | | | $ 324 |
| **BM020F** (BBMF2021 A) | 24VAC 30VDC | 15VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 3.5 to 4.5 | ◆ | ◆ | ◆ | | ◆ | $ 384 |
| **BM060F** (BBMF2060 A) | 24VAC 30VDC | 24VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 3.5 to 4.5 | ◆ | ◆ | ◆ | ◆ | | $ 422 |
| **BM080F** (BBMF2080 A) | 24VAC 30VDC | 24VA | 15VA | ◆ | ◆ | ◆ | ◆ | ◆ | 3.5 to 4.5 | ◆ | ◆ | ◆ | ◆ | ◆ | $ 483 |
| **BM000FFN** (BBMFF2000 NA) | 24VAC 30VDC | 24VA | 24VA | ◆ | ◆ | ◆ | ◆ | ◆ | 3 | ◆ | ◆ | ◆ | | | $ 406 |
| **BM020FFN** (BBMFF2021 NA) | 24VAC 30VDC | 24VA | 24VA | ◆ | ◆ | ◆ | ◆ | ◆ | 3 | ◆ | ◆ | ◆ | | ◆ | $ 466 |
| **BM060FFN** (BBMFF2060 NA) | 24VAC 30VDC | 24VA | 24VA | ◆ | ◆ | ◆ | ◆ | ◆ | 3 | ◆ | ◆ | ◆ | ◆ | | $ 564 |
| ***50 in.lb. (5.6 Nm.) torque at rated voltage*** | | | | | | | | | | | | | | | |
| **BT000F** (BBTF1000 A) | 24VAC 30VDC | 15VA | 15VA | ◆ | ◆ | | | | 6 to 8 | | ◆ | | | | $ 203 |
| **BT020F** (BBTF1021 A) | 24VAC 30VDC | 15VA | 15VA | ◆ | ◆ | | | | 6 to 8 | | ◆ | | | ◆ | $ 286 |
| **BT060F** (BBTF1060 A) | 24VAC 30VDC | 24VA | 15VA | ◆ | ◆ | | | | 6 to 8 | | ◆ | | ◆ | | $ 307 |
| **BT080F** (BBTF1080 A) | 24VAC 30VDC | 24VA | 15VA | ◆ | ◆ | | | | 6 to 8 | | ◆ | | ◆ | ◆ | $ 368 |
| **BM000FN** (BBMF2000 NA) | 24VAC 30VDC | 24VA | 24VA | ◆ | ◆ | ◆ | ◆ | ◆ | 6 | ◆ | ◆ | ◆ | | | $ 406 |
| **BM020FN** (BBMF2021 NA) | 24VAC 30VDC | 24VA | 24VA | ◆ | ◆ | ◆ | ◆ | ◆ | 6 | ◆ | ◆ | ◆ | | ◆ | $ 466 |
| **BM060FN** (BBMF2060 NA) | 24VAC 30VDC | 24VA | 24VA | ◆ | ◆ | ◆ | ◆ | ◆ | 6 | ◆ | ◆ | ◆ | ◆ | | $ 564 |

**Note:** **All actuators are powered by brush motors except those ending with the letter "N"**
**All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008**

# Fast Actuators (120 to 240 in.lb. torque)

neptronic®

***Rotational speeds from 15 to 30 seconds for applications up to 240 in.lb. (27 Nm)***

**PRIMARY USES FOR THESE ACTUATORS**

- fume hood control
- stairwell pressurization
- air handler dampers

These microprocessor based actuators are designed for critical environments where the speed of the actuator is essential. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° electronically.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/30VDC |
| ***Power Consumption:*** | Peak at Start-up: 10VA to 40VA at 26VAC Depending upon the Model<br>Operating at Full Load: 10VA to 30VA at 26VAC Depending upon the Model |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | Two 7/8 in. (22.2mm) or One 5/8 in. (15.9mm) and One 7/8in. (22.2mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (TT & RT):**<br>2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model<br>**Multi Signal:**<br>**ANALOG:** A) 2-10VDC; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable<br>**PULSE WIDTH MODULATION:** Time Base of 0.1 - 5 Seconds/20mS Resolution or 0.1 - 25 Seconds/100mS Resolution Selected by Dip Switch Position<br>SWITCH 24VAC: Triac or Dry Contact, 40mA Max. Switching Current<br>SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current<br>**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating |
| ***Torque at Rated Voltage:*** | **120 in.lb. (13.5 Nm) to 240 in.lb. (27 Nm) at Rated Voltage Depending upon the Model** |
| ***Direction & Time of Rotation:*** | Reversible, 15 to 30 Seconds Depending upon the Model |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Multi Signal (TM or RM):** 4-20mA Output (May be wired for a 2-10VDC signal) |
| ***Fail Safe (Enerdrive) Rating:*** | **Models Ending in 60, 80 (F, FN):** 120 to 240 in.lb. (13.5 to 27Nm) Depending upon the Model |
| ***Enerdrive Response Time:*** | 15 to 20 Seconds Closure Through 90°, Depending upon the Model |
| ***Auxiliary Switches:*** | **Models Ending in 20, 80 (F, FN):** 2 Mechanical Switches, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 5 Amp Resistive, 250VAC |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V |

# Fast (120 to 240 in.lb. torque) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *120 in.lb. (13.5 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **TT000F** (TBTF3000 A) | 24VAC 30VDC | 10VA | 10VA | ◆ | ◆ | | | | 20 to 30 | | ◆ | | | | $ 347 |
| **TT020F** (TBTF3021 A) | 24VAC 30VDC | 10VA | 10VA | ◆ | ◆ | | | | 20 to 30 | | ◆ | | | ◆ | $ 407 |
| **TT060F** (TBTF3060 A) | 24VAC 30VDC | 24VA | 10VA | ◆ | ◆ | | | | 20 to 30 | | ◆ | | ◆ | | $ 603 |
| **TT080F** (TBTF3080 A) | 24VAC 30VDC | 24VA | 10VA | ◆ | ◆ | | | | 20 to 30 | | ◆ | | ◆ | ◆ | $ 664 |
| **TM000FN** (TBMF4000 NA) | 24VAC 30VDC | 25VA | 25VA | ◆ | ◆ | ◆ | ◆ | ◆ | 15 to 20 | ◆ | ◆ | ◆ | | | $ 553 |
| **TM020FN** (TBMF4021 NA) | 24VAC 30VDC | 25VA | 25VA | ◆ | ◆ | ◆ | ◆ | ◆ | 15 to 20 | ◆ | ◆ | ◆ | | ◆ | $ 614 |
| **TM060FN** (TBMF4060 NA) | 24VAC 30VDC | 40VA | 25VA | ◆ | ◆ | ◆ | ◆ | ◆ | 15 to 20 | ◆ | ◆ | ◆ | ◆ | | $ 871 |
| **TM080FN** (TBMF4080 NA) | 24VAC 30VDC | 40VA | 25VA | ◆ | ◆ | ◆ | ◆ | ◆ | 15 to 20 | ◆ | ◆ | ◆ | ◆ | ◆ | $ 933 |
| **TM300FN** (TBMFHV4300 NA) | 24VAC 30VDC 120VAC 240VAC | 30VA | 30VA | ◆ | ◆ | ◆ | ◆ | ◆ | 20 | ◆ | ◆ | ◆ | | | $ 669 |
| **TM320FN** (TBMFHV4321 NA) | 24VAC 30VDC 120VAC 240VAC | 30VA | 30VA | ◆ | ◆ | ◆ | ◆ | ◆ | 20 | ◆ | ◆ | ◆ | | ◆ | $ 731 |
| **TM360FN** (TBMFHV4360 NA) | 24VAC 30VDC 120VAC 240VAC | 50VA | 30VA | ◆ | ◆ | ◆ | ◆ | ◆ | 20 | ◆ | ◆ | ◆ | ◆ | | $ 948 |
| *240 in.lb. (27 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **RT000F** (RBTF5000 A) | 24VAC 30VDC | 18VA | 18VA | ◆ | ◆ | | | | 20 to 30 | | ◆ | | | | $ 503 |
| **RT020F** (RBTF5021 A) | 24VAC 30VDC | 18VA | 18VA | ◆ | ◆ | | | | 20 to 30 | | ◆ | | | ◆ | $ 565 |
| **RT060F** (RBTF5060 A) | 24VAC 30VDC | 40VA | 18VA | ◆ | ◆ | | | | 20 to 30 | | ◆ | | ◆ | | $ 982 |
| **RT080F** (RBTF5080 A) | 24VAC 30VDC | 40VA | 18VA | ◆ | ◆ | | | | 20 to 30 | | ◆ | | ◆ | ◆ | $ 1,071 |
| **RM000FN** (RBMF6000 NA) | 24VAC 30VDC | 25VA | 25VA | ◆ | ◆ | ◆ | ◆ | ◆ | 15 to 20 | ◆ | ◆ | ◆ | | | $ 642 |
| **RM020FN** (RBMF6021 NA) | 24VAC 30VDC | 25VA | 25VA | ◆ | ◆ | ◆ | ◆ | ◆ | 15 to 20 | ◆ | ◆ | ◆ | | ◆ | $ 698 |
| **RM060FN** (RBMF6060 NA) | 24VAC 30VDC | 40VA | 25VA | ◆ | ◆ | ◆ | ◆ | ◆ | 15 to 20 | ◆ | ◆ | ◆ | ◆ | | $ 1,115 |
| **RM080FN** (RBMF6080 NA) | 24VAC 30VDC | 40VA | 25VA | ◆ | ◆ | ◆ | ◆ | ◆ | 15 to 20 | ◆ | ◆ | ◆ | ◆ | ◆ | $ 1,232 |
| **RM300FN** (RBMFHV6300 NA) | 24VAC 30VDC 120VAC 240VAC | 30VA | 30VA | ◆ | ◆ | ◆ | ◆ | ◆ | 20 | ◆ | ◆ | ◆ | | | $ 938 |
| **RM320FN** (RBMFHV6321 NA) | 24VAC 30VDC 120VAC 240VAC | 30VA | 30VA | ◆ | ◆ | ◆ | ◆ | ◆ | 20 | ◆ | ◆ | ◆ | | ◆ | $ 999 |
| **RM360FN** (RBMFHV6360 NA) | 24VAC 30VDC 120VAC 240VAC | 50VA | 30VA | ◆ | ◆ | ◆ | ◆ | ◆ | 20 | ◆ | ◆ | ◆ | ◆ | | $ 1,466 |

**Note:** **All actuators are powered by brush motors except those ending with the letter "N"**
**All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008**

# SMOKE DAMPER ACTUATORS

# Smoke Damper Actuators

neptronic®

***Rotational speeds from 20 to 30 seconds for applications up to 90 in.lb. (11 Nm)***

**PRIMARY USES FOR THESE ACTUATORS**

- designed to operate reliably in smoke control systems at 250°F (121°C)
- 2 Position, with electronic fail safe
- 30 sec. open and close

These actuators are designed to operate reliably in smoke control systems requiring Underwriter's Laboratories Inc, UL 555S rated at 250°F. UL 555S listing is available when tested and assembled at the damper manufacturer's factory.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/24VDC, 120VAC or 240VAC Depending upon the Model |
| ***Power Consumption:*** | Running Consumption: 15VA to 24VA Depending upon the Model<br>Holding Consumption: 5VA |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | Two 7/8 in. (22.2mm) or One 5/8 in. (15.9mm) and One 7/8in. (22.2mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | 2 Wire 2 Position |
| ***Torque:*** | **35 in.lb. (4 Nm) to 90 in.lb. (11 Nm) at Rated Voltage Depending upon the Model** |
| ***Direction & Time of Rotation:*** | Reversible, 20-30 Seconds |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C)<br>* 250°F (121°C) for a limited time |
| ***Fail Safe (Enerdrive) Rating:*** | 35 to 90 in.lb. (4 to 11Nm) Depending upon the Model |
| ***Enerdrive Response Time:*** | 15 Seconds Closure Through 90° |
| ***Auxiliary Switches:*** | **Models Ending in 80X_ _:** 2 Mechanical Switches<br>Switching Points: 5° & 85° +/-5° |
| ***Auxiliary Switch Rating:*** | 5 Amp Resistive, 250VAC |
| ***Electronic Enclosure:*** | NEMA type 2 / IP42 |

# Smoke Damper Actuators Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | Time in Seconds Thru 90° Arc | Actuator Features | | List Price |
|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | RUNNING | HOLDING | 2 POSITION | | | | |
| *for applications requiring up to 35 in.lb. (4 Nm.) torque at rated voltage* | | | | | | | | |
| **BT060X4** | 24VAC 24VDC | 15VA | 5VA | ◆ | 20 to 30 | ◆ | | $ 280 |
| **BT080X4** | 24VAC 24VDC | 15VA | 5VA | ◆ | 20 to 30 | ◆ | ◆ | $ 340 |
| **BT160X4** | 120VAC | 15VA | 5VA | ◆ | 20 to 30 | ◆ | | $ 324 |
| **BT180X4** | 120VAC | 15VA | 5VA | ◆ | 20 to 30 | ◆ | ◆ | $ 384 |
| **BT260X4** | 240VAC | 15VA | 5VA | ◆ | 20 to 30 | ◆ | | $ 324 |
| **BT280X4** | 240VAC | 15VA | 5VA | ◆ | 20 to 30 | ◆ | ◆ | $ 384 |
| *for applications requiring up to 70 in.lb. (8 Nm.) torque at rated voltage* | | | | | | | | |
| **BT060X8** | 24VAC 24VDC | 15VA | 5VA | ◆ | 20 to 30 | ◆ | | $ 351 |
| **BT080X8** | 24VAC 24VDC | 15VA | 5VA | ◆ | 20 to 30 | ◆ | ◆ | $ 411 |
| **BT160X8** | 120VAC | 15VA | 5VA | ◆ | 20 to 30 | ◆ | | $ 384 |
| **BT180X8** | 120VAC | 15VA | 5VA | ◆ | 20 to 30 | ◆ | ◆ | $ 444 |
| **BT260X8** | 240VAC | 15VA | 5VA | ◆ | 20 to 30 | ◆ | | $ 384 |
| **BT280X8** | 240VAC | 15VA | 5VA | ◆ | 20 to 30 | ◆ | ◆ | $ 444 |
| *for applications requiring up to 90 in.lb. (11 Nm.) torque at rated voltage* | | | | | | | | |
| **LT060X11** | 24VAC 24VDC | 24VA | 5VA | ◆ | 20 to 30 | ◆ | | $ 587 |
| **LT080X11** | 24VAC 24VDC | 24VA | 5VA | ◆ | 20 to 30 | ◆ | ◆ | $ 646 |
| **LT160X11** | 120VAC | 24VA | 5VA | ◆ | 20 to 30 | ◆ | | $ 630 |
| **LT180X11** | 120VAC | 24VA | 5VA | ◆ | 20 to 30 | ◆ | ◆ | $ 690 |
| **LT260X11** | 240VAC | 24VA | 5VA | ◆ | 20 to 30 | ◆ | | $ 630 |
| **LT280X11** | 240VAC | 24VA | 5VA | ◆ | 20 to 30 | ◆ | ◆ | $ 690 |

# IP65 / NEMA 4 ACTUATORS

***Rotational speeds from 60 to 85 seconds for applications up to 360 in.lb. (40 Nm)***

**PRIMARY USES FOR THESE ACTUATORS**

- high humidity applications
- outdoor applications
- food industry
- animal husbandry


These quarter turn actuators have been designed with IP65 (equivalent to Nema type 4) protection against water or chemicals such as ammonia. They are to be installed in very demanding environmental conditions such as industrial food plants or animal husbandry. All actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/30VDC |
| ***Power Consumption:*** | Peak at Start-up: 8VA to 30VA at 26VAC Depending upon the Model<br>Operating at Full Load: 8VA to 10VA at 26VAC Depending upon the Model |
| ***Electrical Connections:*** | 1 meter long 6 wire plenum cable, 18 AWG [0.8 mm2] |
| ***Control Signals:*** | **Analog:** 2-10 VDC |
| ***Torque:*** | **140 in.lb. (16 Nm) to 360 in.lb. (40 Nm) at Rated Voltage Depending upon the Model** |
| ***Direction & Time of Rotation:*** | Reversible, 60-85 Seconds |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C) |
| ***Fail Safe (Enerdrive) Rating:*** | 140 to 360 in.lb. (16 to 40Nm) Depending upon the Model |
| ***Enerdrive Response Time:*** | 60-85 Seconds Closure Through 90° |
| ***Auxiliary Switches:*** | **Models Ending in 20W & 80W:** 2 Mechanical Switches, Fixed at $10^0$ & $80^0$ |
| ***Auxiliary Switch Rating:*** | 5 Amp Resistive, 250VAC |
| ***Electronic Enclosure:*** | IP65 equivalent to Nema type 4 enclosure with special protection against chemicals |

# IP65 / NEMA 4 Actuators (low voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *140 in.lb. (16 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **LM000W** | 24VAC 30VDC | 8VA | 8VA | | | ◆ | | | 60 to 85 | | ◆ | | | | $ 403 |
| **LM020W** | 24VAC 30VDC | 8VA | 8VA | | | ◆ | | | 60 to 85 | | ◆ | | | ◆ | $ 463 |
| **LM060W** | 24VAC 30VDC | 30VA | 8VA | | | ◆ | | | 60 to 85 | | ◆ | | ◆ | | $ 561 |
| **LM080W** | 24VAC 30VDC | 30VA | 8VA | | | ◆ | | | 60 to 85 | | ◆ | | ◆ | ◆ | $ 622 |
| *180 in.lb. (20 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **TM000W** | 24VAC 30VDC | 8VA | 8VA | | | ◆ | | | 60 to 85 | | ◆ | | | | $ 455 |
| **TM020W** | 24VAC 30VDC | 8VA | 8VA | | | ◆ | | | 60 to 85 | | ◆ | | | ◆ | $ 515 |
| **TM060W** | 24VAC 30VDC | 30VA | 8VA | | | ◆ | | | 60 to 85 | | ◆ | | ◆ | | $ 683 |
| **TM080W** | 24VAC 30VDC | 30VA | 8VA | | | ◆ | | | 60 to 85 | | ◆ | | ◆ | ◆ | $ 745 |
| *360 in.lb. (40 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **RM000W** | 24VAC 30VDC | 10VA | 10VA | | | ◆ | | | 60 to 85 | | ◆ | | | | $ 555 |
| **RM020W** | 24VAC 30VDC | 10VA | 10VA | | | ◆ | | | 60 to 85 | | ◆ | | | ◆ | $ 616 |
| **RM060W** | 24VAC 30VDC | 30VA | 10VA | | | ◆ | | | 60 to 85 | | ◆ | | ◆ | | $ 1,017 |
| **RM080W** | 24VAC 30VDC | 30VA | 10VA | | | ◆ | | | 60 to 85 | | ◆ | | ◆ | ◆ | $ 1,079 |

***Rotational speeds from 60 to 85 seconds for applications up to 360 in.lb. (40 Nm)***

**PRIMARY USES FOR THESE ACTUATORS**

- high humidity applications
- outdoor applications
- food industry
- animal husbandry


These quarter turn actuators have been designed with IP65 (equivalent to Nema type 4) protection against water or chemicals such as ammonia. They are to be installed in very demanding environmental conditions such as industrial food plants or animal husbandry. All actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions.

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 120VAC or 240VAC Depending upon the Model |
| ***Power Consumption:*** | Peak at Start-up: 10VA to 30VA at Line Voltage Depending upon the Model<br>Operating at Full Load: 10VA to 14VA at Line Voltage Depending upon the Model |
| ***Electrical Connections:*** | 1 meter long 6 wire plenum cable, 18 AWG [0.8 mm2] |
| ***Control Signals:*** | **Analog:** 2-10 VDC |
| ***Torque:*** | **140 in.lb. (16 Nm) to 360 in.lb. (40 Nm) at Rated Voltage Depending upon the Model** |
| ***Direction & Time of Rotation:*** | Reversible, 60-85 Seconds |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C) |
| ***Fail Safe (Enerdrive) Rating:*** | 140 to 360 in.lb. (16 to 40Nm) Depending upon the Model |
| ***Enerdrive Response Time:*** | 60-85 Seconds Closure Through 90° |
| ***Electronic Enclosure:*** | IP65 equivalent to Nema type 4 enclosure with special protection against chemicals |

# IP65 / NEMA 4 Actuators (line voltage) Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Time in Seconds Thru 90° Arc | Actuator Features | | | | | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe (Enerdrive) | 2 Mech. Aux. Switches | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *140 in.lb. (16 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **LM100W** | 120VAC | 10VA | 10VA | | | ◆ | | | 60 to 85 | | ◆ | | | | $ 452 |
| **LM160W** | 120VAC | 30VA | 10VA | | | ◆ | | | 60 to 85 | | ◆ | | ◆ | | $ 610 |
| **LM200W** | 240VAC | 10VA | 10VA | | | ◆ | | | 60 to 85 | | ◆ | | | | $ 452 |
| **LM260W** | 240VAC | 30VA | 10VA | | | ◆ | | | 60 to 85 | | ◆ | | ◆ | | $ 610 |
| *180 in.lb. (20 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **TM100W** | 120VAC | 10VA | 10VA | | | ◆ | | | 60 to 85 | | ◆ | | | | $ 510 |
| **TM160W** | 120VAC | 30VA | 10VA | | | ◆ | | | 60 to 85 | | ◆ | | ◆ | | $ 806 |
| **TM200W** | 240VAC | 10VA | 10VA | | | ◆ | | | 60 to 85 | | ◆ | | | | $ 510 |
| **TM260W** | 240VAC | 30VA | 10VA | | | ◆ | | | 60 to 85 | | ◆ | | ◆ | | $ 806 |
| *360 in.lb. (40 Nm.) torque at rated voltage* | | | | | | | | | | | | | | | |
| **RM100W** | 120VAC | 14VA | 14VA | | | ◆ | | | 60 to 85 | | ◆ | | | | $ 627 |
| **RM160W** | 120VAC | 30VA | 14VA | | | ◆ | | | 60 to 85 | | ◆ | | ◆ | | $ 1,068 |
| **RM200W** | 240VAC | 14VA | 14VA | | | ◆ | | | 60 to 85 | | ◆ | | | | $ 627 |
| **RM260W** | 240VAC | 30VA | 14VA | | | ◆ | | | 60 to 85 | | ◆ | | ◆ | | $ 1,068 |

LISTED

***100 lb. (450 N) & 1500 lb. (6750 N) force***

**PRIMARY USES FOR THESE ACTUATORS**

- Used with Neptronic supplied Globe Valves
- Retrofit for most popular Globe Valves

| | | |
|---|---|---|
| • Cazzaniga | • Controlli | • Johnson Controls |
| • Honeywell | • Invensys | • Siemens |
| • Robertshaw | • Tour & Anderson | • Danfoss |

## General Specifications

| | |
|---|---|
| ***Power Supply:*** | 24VAC/30VDC, 24VDC or 24VAC/120VAC/240VAC Depending upon the Model |
| ***Power Consumption:*** | Peak at Start-up: 4VA to 40VA at 26VAC Depending upon the Model<br>Operating at Full Load: 4VA to 40VA at 26VAC Depending upon the Model |
| ***Wire Size:*** | 18 AWG (0.8 $mm^2$) Minimum |
| ***Electrical Connections:*** | 5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals |
| ***Control Signals:*** | **Digital (AT):**<br>2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model<br>**Multi Signal (AM & MM):**<br>**ANALOG:** A) 2-10VDC; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable<br>**PULSE WIDTH MODULATION:** Time Base of 0.1 - 5 Seconds/20mS Resolution or 0.1 - 25 Seconds/100mS Resolution Selected by Dip Switch Position<br>SWITCH 24VAC: Triac or Dry Contact, 40mA Max. Switching Current<br>SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current<br>**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating |
| ***Force:*** | **(A): 100 lb. (450 N) & (M): 1500 lb. (6750 N) at Rated Voltage** |
| ***Direction & Running Time:*** | (A): Reversible, 60 Seconds or 90 to 100 Sec. Depending upon the Model<br>(M): Reversible, 2 to 7 minutes. Depending upon stroke, Force independent |
| ***Ambient Temperature:*** | 0°F to +122°F (-18°C to +50°C) |
| ***Feedback Potentiometer:*** | **In Digital (ATXX5):** Potentiometer (5 Kohms)<br>**In Multi Signal (AM & M):** 4-20mA Output (May be wired for a 2-10VDC signal) |
| ***Fail Safe Rating:*** | **(A) Models Ending in 60 & 80:** 100 lb. (450 N), **(M) Models Ending in 10:** 1500 lb. (6750 N) |
| ***Response Time:*** | (A): 0-100 lb. (0-450N): 60 Seconds for Full Stroke<br>(M): 0-1500 lb. (0-6750N): 7 Minutes for Full Stroke |
| ***Auxiliary Switches:*** | **Models Ending in 20 or 80:** 2 Mechanical Switches, Fixed at 10° & 80° |
| ***Auxiliary Switch Rating:*** | 1 Amp Resistive, 24VAC |
| ***Electronic Enclosure:*** | Flammability rating UL94-5V |

# A & M Linear Actuators Quick Select

**Spec Sheet Available on Our Website**

| Actuator Models | Power | | | Control Signals | | | | | Full Stroke Time in Seconds | Actuator Features | | | | 2 Mech. Aux. Switches | List Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nom. Supply | Consumption | | Digital | | Multi Signal | | | | Feed Back | Auto Stroke | Zero & Span | Fail Safe | | |
| | | Start Up | Full Load | 2 POS | 3 PT FLT | 2-10 VDC | 4-20 mA | PWM | | | | | | | |
| *low voltage 100 lb. (450 N) force* | | | | | | | | | | | | | | | |
| **AT000** (AQT1000A-05-S) | 24VAC 30VDC | 6VA | 6VA | ◆ | ◆ | | | | 60 | | | | | | $ 198 |
| **AT005** (AQT1005A-05-S) | 24VAC 30VDC | 6VA | 6VA | ◆ | ◆ | | | | 60 | ◆ | | | | | $ 253 |
| **AT020** (AQT1021A-05-S) | 24VAC 30VDC | 6VA | 6VA | ◆ | ◆ | | | | 60 | | | | | ◆ | $ 269 |
| **AT060** (AQT1060A-05-S) | 24VAC 30VDC | 20VA | 6VA | ◆ | ◆ | | | | 60 | | | | ◆ | | $ 324 |
| **AT065** (AQT1065A-05-S) | 24VAC 30VDC | 20VA | 6VA | ◆ | ◆ | | | | 60 | ◆ | | | ◆ | | $ 379 |
| **AT080** (AQT1080A-05-S) | 24VAC 30VDC | 20VA | 6VA | ◆ | ◆ | | | | 60 | | | | ◆ | ◆ | $ 389 |
| **AM000** (AQM2000A-05-S) | 24VAC 30VDC | 6VA | 6VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 | ◆ | ◆ | ◆ | | | $ 340 |
| **AM060** (AQM2060A-05-S) | 24VAC 30VDC | 20VA | 6VA | ◆ | ◆ | ◆ | ◆ | ◆ | 60 | ◆ | ◆ | ◆ | ◆ | | $ 438 |
| **AM400** (AQM24A-05-S) | 24VAC | 4VA | 4VA | ◆ | ◆ | ◆ | ◆ | ◆ | 90 to 100 | ◆ | ◆ | ◆ | | | $ 362 |
| *for applications requiring up to 1500 lb. (6750 N) force at rated voltage* | | | | | | | | | | | | | | | |
| **MM000** (MTM910AV) | 24VAC 30VDC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 2 to 7 Min | ◆ | ◆ | ◆ | | | $ 2,924 |
| **MM010** (MTM940AV) | 24VAC 30VDC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 2 to 7 Min | ◆ | ◆ | ◆ | ◆ | | $ 3,187 |
| **MM300** | 24VAC 30VDC 120VAC 240VAC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 2 to 7 Min | ◆ | ◆ | ◆ | | | $ 3,072 |
| **MM310** | 24VAC 30VDC 120VAC 240VAC | 40VA | 40VA | ◆ | ◆ | ◆ | ◆ | ◆ | 2 to 7 Min | ◆ | ◆ | ◆ | ◆ | | $ 3,307 |

**Note:** **All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008. The last three characters of the nomenclature (05-S) designate an Invensys globe valve linkage. If you need an actuator for a different globe valve, please call the factory for accurate nomenclature, price and delivery.**

# Mechanical Stroke Limiting Device for L, T & R Damper Actuators

## Description

The SLD or Stroke Limiting Device is an ancillary component that is added to the universal clamp assembly of any of either the L, T or R damper actuator models. It mechanically adjusts the stroke within the $90^0$ arc.

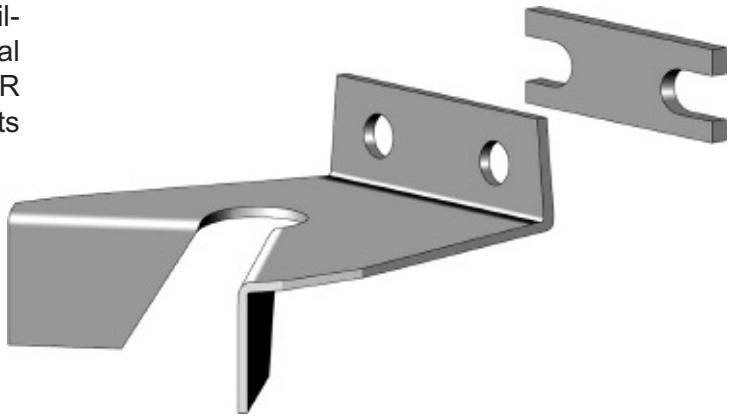


Figure: The Stroke Limiting Device complete with Stopper

## Application

Two instances where an SLD can be used.

1. For a damper with a stroke of less than $90^0$ without mechanical end stops.
2. To maintain minimum air flow in the duct; for example, to prevent the damper from closing below $10^0$ minimum position.

## Installation

The SLD should be added prior to installation. However, if the actuator is already installed, remove the power supply and the control signal prior to taking the actuator off the damper.

Remove the cover from the actuator. Depress the clutch which is located on the PC board and simultaneously rotate the universal clamp assembly (UCA) until it's end stop. The UCA indicator should be at the zero positon.

Temporarily replace the cover to protect the electronics and invert the actuator. Carefully remove the retaining clip that holds the UCA in place.

With the actuator again in the upright position remove the two 10 mm nuts on the U clamp. Slide the stroke limiting device (SLD) onto the clamp and replace the nuts so that the SLD is held loosely in place.

Extract the UCA from the actuator and re-insert it so that the indicator is now in any location between $0^o$ and $90^o$ depending on the rotation arc you require.

**Example: Putting the UCA indicator at the $20^o$ mark will result in a rotation of $70^o$. Note that the SLD butts against the actuator housing to mechanicaly limit the stroke. Reinserting the UCA indicator at the $80^o$ mark will give a stroke of $10^o$ and so forth.**

After selecting your stroke invert the actuator and reattach the clip ring.

Manually position the damper blades at the physical end stop such that the start position on the damper and the actuator coincide.

Slide the actuator onto the jack shaft through the aperture in the UCA.

## Installation continued

Attach the motor bracket, which is provided, to the duct work such that the stop rotational pin sits loosely in the slot that is located on the base plate beneath the EMT ports. This provides for some lateral movement without allowing the actuator to rotate about the shaft. The motor bracket may be bent for offsetting where the duct work is coated in insulation. Tighten the bolts on the UCA.

With the cover off, the terminal block is easily accessible and the actuator may now be wired according to the diagram that corresponds to the actuator model and mode of control as described in the electrical instruction section. For actuators with auxiliary switches, verify that the contacts coincide with the rotational direction required. Replace the cover and secure.

**Do not clutch motor when power is on. Always remove power first. Then clutch and turn damper or valve.**

**NEVER SCREW OR BOLT DOWN THE END OF THE MOTOR DIRECTLY TO THE DUCT WORK! NEVER DRILL INTO THE MOTOR CASING!**

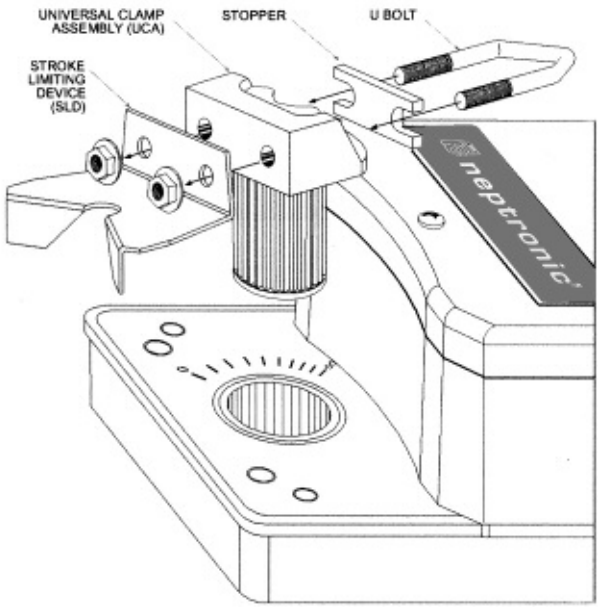
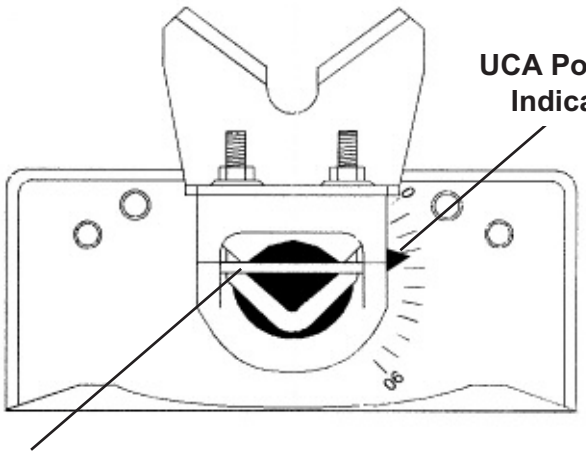
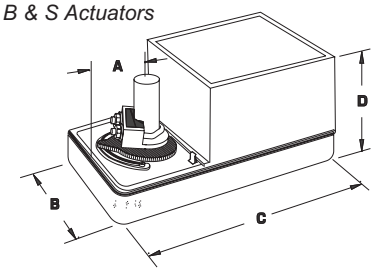



Figure: This diagram illustrates the correct sequence for attaching the SLD and Stopper.




Stopper required only when actuator is remote mounted with a crank arm.

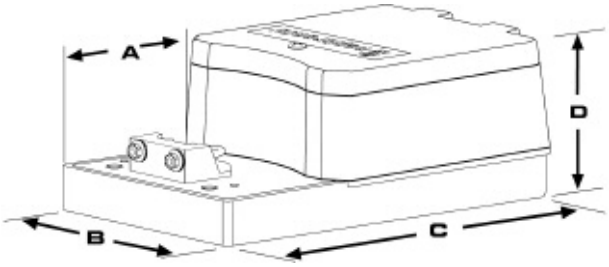
*Figure i C, D, B & S Actuators*




| Dim. | C, D, B & S Actuators | | L & T Actuators | | R Actuators | |
|---|---|---|---|---|---|---|
| | INCHES | CENTI-METERS | INCHES | CENTI-METERS | INCHES | CENTI-METERS |
| A | 1.50 | 3.81 | 1.33 | 3.38 | 1.33 | 3.38 |
| B | 3.26 | 8.28 | 5.20 | 13.21 | 5.20 | 13.21 |
| C | 6.60 | 16.75 | 9.13 | 23.19 | 9.13 | 23.19 |
| D | 3.01 | 7.64 | 3.39 | 8.61 | 3.55 | 9.02 |

| Factory Settings for Multi Signal Actuators | |
|---|---|
| Control Signal | 2 - 10VDC |
| Feedback | 4 - 20mA |
| Stroke | 90° |
| Rotational Direction | 0° to 90° - Clockwise |
| *The Enerdrive System* | "Fail" to the 0° Position |

*Figure ii L, T & R Actuators*



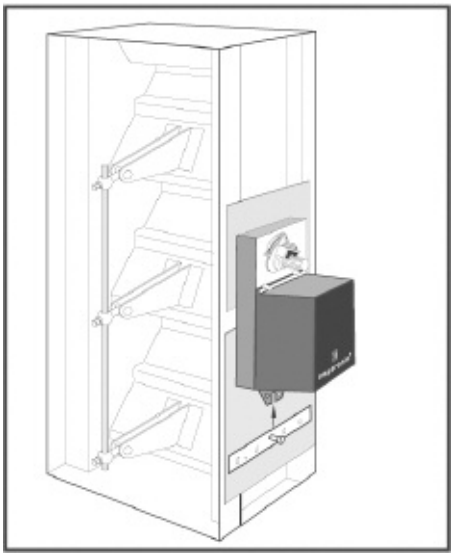

## Actuator Installation

Neptronic damper actuators are designed for direct mounting to the damper jack shaft. They may be mounted in any plane.

Slide the actuator onto the jack shaft through the aperture in the universal clamp assembly. Attach the motor bracket, which is provided, to the duct work such that the stop rotational pin sits loosely in the slot that is located on the base plate beneath the EMT ports. This provides for some lateral movement without allowing the motor to rotate about the shaft. The motor bracket may be bent for offsetting where the duct work is coated in insulation.

Loosen the retaining screw securing the motor cover to the casing and remove the cover. Simultaneously depress the motor clutch and rotate the universal clamp assembly so that the start position of the motor and the damper coincide. Release the clutch and tighten the bolts on the universal clamp. Replace the cover and secure.

***Never screw or bolt down the end of the motor directly to the duct work! Never drill into the motor casing!***



This drawing illustrates the correct placement of the actuator on the damper's jack shaft.

Accessories such as the Assembly for Remote Mounting (**ARM**) and Standoff Bracket (**ELBB**, **ELTR**) are available for those circumstances where direct mounting is not feasible. Refer to page 63 for a complete list.

**DCA38, DCA50**
Damper Crank Arm accepts up to 3/8” or 1/2” jack shaft depending upon the model.

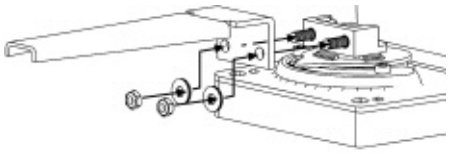
**MCABB & MCATR**
Motor Crank Arm for C/D/B/S or L/T/R actuators.

**SLD**
Stroke Limiting Device is a mechanical limiting bracket for L, T or R actuators.

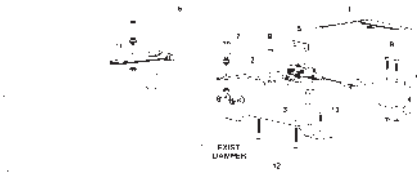
**RSA**
Ruskin Shaft Adapter for direct mounting of an L, T or R actuator on the 1 inch hollow Ruskin jack shaft.

**ELBB, ELTR & ELUB**
“L” Standoff Bracket for C/D/B/S or L/T/R or U/W.

**BJ516 & BJ38**
Ball Joint for 5/16” or 3/8” rod depending upon the model.



**MINI & MAXI HANDLES**
Universal Clamp Assembly Handle for C/D/B/S or L/T/R actuators depending upon the model.



**ARM24BB & ARM36BB**
Assembly for Remote Mounting for C,D,B & S actuators only. Contains 2 ball joints, 1 motor crank arm, 24” or 36” length 5/16” rod depending upon the model, set nut & bolts.

**ARM24TR & ARM36TR**
Assembly for Remote Mounting for L, T or R actuators only. Contains 2 ball joints, 1 motor crank arm, 24” or 36” length 3/8” rod depending upon the model, set nut & bolts.

**UBARM**
Assembly for Remote Mounting of U & W actuator only. Contains 2 ball joints, 1 crank arm, 36” length 1/2” SS rod, set nuts & bolts.


**RH1 & RH2**
Rain Hood protective enclosure for C/D/B/S or L/T/R actuators depending upon the model.


The standard actuator model B, above, with the Enerdrive System is rated at a minimum of 50 in.lb. torque.

U.S. Patent #5,278,454

## Description

The ***Enerdrive System, The Electronic Spring*** is a patented method of operating a damper or valve actuator during a power outage at full rated torque in a clockwise or counterclockwise direction such that the controlled device arrives at a fully closed or fully open position where it remains indefinitely or until the mains power is restored.

It is comprised of an electronic circuit which is integral to the actuator's PC board and super capacitors. It is the energy generated and stored in the super capacitor that is used by the circuit to drive the actuator.

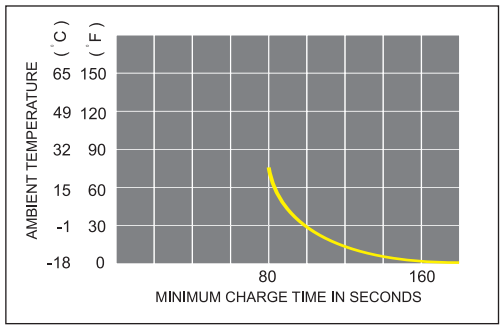



*Fig. ii The Effect of Temperature on Charge Time of the Enerdrive System for the Maximum Load of 50 in.lb. at 77°F/25°C*

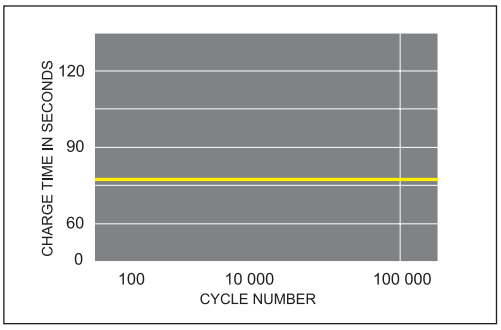



*Fig. i The Cyclic Characteristics of the Enerdrive System for the Maximum Load of 50 in.lb. at 77°F/25°C.*

## Application

Having a controlled device return to a specific, or fail safe, position is required by industries or HVAC systems to prevent harm or damage to equipment, products, livestock and people due to environmental factors. The controlled device may be a damper, VAV box, fume hood or valve.

This is the primary function of the ***Enerdrive System***. However, in 2 wire/2 position installations, it is used to power the actuator in opposition to the control signal direction when control is broken. The graph in Figure i illustrates the rapidity and constancy of the ***Enerdrive System*** for virtually unlimited cycling of the actuator as frequently or infrequently as required.

## Description

During installation, the field technician calibrates the actuator using the dip switch to respond according to the application requirements. When power is initially applied, the actuator is engaged, driving in the chosen direction and the ***Enerdrive System*** is activated absorbing charge. The system is fully operational within 90 seconds at 77°F or 25°C. ( Fig. ii). There is no delay in the actuator's response.

The motor operates normally under control signal until power is interrupted. This interruption activates the ***Enerdrive System*** which supplies the actuator with sufficient power to maintain its full rated torque as the motor drives the controlled device to its fail safe position. With the restoration of power, the actuator immediately resumes its function under control signal input and the ***Enerdrive System*** is recharged.

## Description

- state of the art electronics
- full torque response
- 100% operational with restoration of power
- fail position selected by dip switch
- emergency override by manual clutch
- in models from 18 in. lb. to 360 in. lb. torque
- in low and line voltage models
- inherent characteristics allow long operational life
- super capacitors are environmentally safe
- no mechanical parts
- no mechanical failures





| Old no. | New no. |
|---|---|
| AQM2000A | AM000 |
| AQM2060A | AM060 |
| AQM24A | AM400 |
| AQT1000A | AT000 |
| AQT1005A | AT005 |
| AQT1021A | AT020 |
| AQT1060A | AT060 |
| AQT1065A | AT065 |
| AQT1080A | AT080 |
| BBM2000A | BM000 |
| BBM2000NA | BM000N |
| BBM2021A | BM020 |
| BBM2021NA | BM020N |
| BBM2060A | BM060 |
| BBM2060NA | BM060N |
| BBM2080A | BM080 |
| BBM24A | BM400 |
| BBM24AAX | BM420 |
| BBMF2000A | BM000F |
| BBMF2000N | BM000FN |
| BBMF2021A | BM020F |
| BBMF2021N | BM020FN |
| BBMF2060A | BM060F |
| BBMF2060N | BM060FN |
| BBMF2080A | BM080F |
| BBMFF2000A | BM000FF |
| BBMFF2000NA | BM000FFN |
| BBMFF2021A | BM020FF |
| BBMFF2021NA | BM020FFN |
| BBMFF2060A | BM060FF |
| BBMFF2060NA | BM060FFN |
| BBMFF2080A | BM080FF |
| BBMS2000 | BM000S |
| BBMS2021 | BM020S |
| BBMS2060 | BM060S |
| BBMS2080 | BM080S |
| BBMS2800 | BM800S |
| BBMS2821 | BM820S |
| BBMS2860 | BM860S |
| BBMS2880 | BM880S |
| BBT1000A | BT000 |
| BBT1005A | BT005 |
| BBT1021A | BT020 |
| BBT1060A | BT060 |
| BBT1065A | BT065 |
| BBT1080A | BT080 |
| BBT24A | BT400 |
| BBT24AAX | BT420 |
| BBT24AP | BT405 |

| Old no. | New no. |
|---|---|
| BBTF1000A | BT000F |
| BBTF1021A | BT020F |
| BBTF1060A | BT060F |
| BBTF1080A | BT080F |
| BBTHV1100A | BT100 |
| BBTHV1105A | BT105 |
| BBTHV1121A | BT120 |
| BBTHV1160A | BT160 |
| BBTHV1180A | BT180 |
| BBTHV1200A | BT200 |
| BBTHV1205A | BT205 |
| BBTHV1221A | BT220 |
| BBTHV1260A | BT260 |
| BBTHV1280A | BT280 |
| BBTS1000 | BT000S |
| BBTS1005 | BT005S |
| BBTS1021 | BT020S |
| BBTS1060 | BT060S |
| BBTS1065 | BT065S |
| BBTS1080 | BT080S |
| BBTS1800 | BT800S |
| BBTS1860 | BT860S |
| BBTS24A | BT400S |
| BBTS24AAX | BT420S |
| BBTS24AP | BT405S |
| LDM4000A | LM000 |
| LDM4021A | LM020 |
| LDM4060A | LM060 |
| LDM4080A | LM080 |
| LDMHV4300A | LM300 |
| LDMHV4321A | LM320 |
| LDMHV4360A | LM360 |
| LDMHV4380A | LM380 |
| LDT3000A | LT000 |
| LDT3005A | LT005 |
| LDT3021A | LT020 |
| LDT3060A | LT060 |
| LDT3065A | LT065 |
| LDT3080A | LT080 |
| LDTHV3300A | LT300 |
| LDTHV3305A | LT305 |
| LDTHV3321A | LT320 |
| LDTHV3360A | LT360 |
| LDTHV3365A | LT365 |
| LDTHV3380A | LT380 |
| MDMS2060 | DM060S |
| MDMS2080 | DM080S |
| MDTS1060 | DT060S |
| MDTS1065 | DT065S |
| MDTS1080 | DT080S |

| Old no. | New no. |
|---|---|
| MTM910AV | MM000 |
| MTM940AV | MM010 |
| RBM6000A | RM000 |
| RBM6000NA | RM000N |
| RBM6021A | RM020 |
| RBM6021NA | RM020N |
| RBM6060A | RM060 |
| RBM6060NA | RM060N |
| RBM6080A | RM080 |
| RBM6080NA | RM080N |
| RBMF6000NA | RM000FN |
| RBMF6021NA | RM020FN |
| RBMF6060NA | RM060FN |
| RBMF6080NA | RM080FN |
| RBMFHV6300NA | RM300FN |
| RBMFHV6321NA | RM320FN |
| RBMFHV6360NA | RM360FN |
| RBMHV6300A | RM300 |
| RBMHV6300NA | RM300N |
| RBMHV6321A | RM320 |
| RBMHV6321NA | RM320N |
| RBMHV6360A | RM360 |
| RBMHV6360NA | RM360N |
| RBMHV6380A | RM380 |
| RBT5000A | RT000 |
| RBT5005A | RT005 |
| RBT5021A | RT020 |
| RBT5060A | RT060 |
| RBT5065A | RT065 |
| RBT5080A | RT080 |
| RBTF5000A | RT000F |
| RBTF5021A | RT020F |
| RBTF5060A | RT060F |
| RBTF5080A | RT080F |
| RBTHV5300A | RT300 |
| RBTHV5305A | RT305 |
| RBTHV5321A | RT320 |
| RBTHV5360A | RT360 |
| RBTHV5365A | RT365 |
| RBTHV5380A | RT380 |
| TBM4000A | TM000 |
| TBM4000NA | TM000N |
| TBM4021A | TM020 |
| TBM4021NA | TM020N |
| TBM4060A | TM060 |
| TBM4060NA | TM060N |
| TBM4080A | TM080 |
| TBM4080NA | TM080N |
| TBMF4000NA | TM000FN |
| TBMF4021NA | TM020FN |
| TBMF4060NA | TM060FN |

| Old no. | New no. |
|---|---|
| TBMF4080NA | TM080FN |
| TBMFHV4300NA | TM300FN |
| TBMFHV4321NA | TM320FN |
| TBMFHV4360NA | TM360FN |
| TBMHV4300A | TM300 |
| TBMHV4300NA | TM300N |
| TBMHV4321A | TM320 |
| TBMHV4321NA | TM320N |
| TBMHV4360A | TM360 |
| TBMHV4360NA | TM360N |
| TBMHV4380A | TM380 |
| TBT3000A | TT000 |
| TBT3005A | TT005 |
| TBT3021A | TT020 |
| TBT3060A | TT060 |
| TBT3065A | TT065 |
| TBT3080A | TT080 |
| TBTF3000A | TT000F |
| TBTF3021A | TT020F |
| TBTF3060A | TT060F |
| TBTF3080A | TT080F |
| TBTHV3300A | TT300 |
| TBTHV3305A | TT305 |
| TBTHV3321A | TT320 |
| TBTHV3360A | TT360 |
| TBTHV3365A | TT365 |
| TBTHV3380A | TT380 |
| UB8000A | UT000 |
| UB8000A-AUX2 | UT020 |
| UB8010A | UM000 |
| UB8010A-AUX2 | UM020 |
| UB8030A | UT010 |
| UB8030A-AUX2 | UT030 |
| UB8040A | UM010 |
| UB8040A-AUX2 | UM030 |
| UB8310A | UM300 |
| UB8310A-AUX2 | UM320 |
| UB8340A | UM310 |
| UB8340A-AUX2 | UM330 |
| UB9000A | WT000 |
| UB9000A-AUX2 | WT020 |
| UB9010A | WM000 |
| UB9010A-AUX2 | WM020 |
| UB9030A | WT010 |
| UB9030A-AUX2 | WT030 |
| UB9040A | WM010 |
| UB9040A-AUX2 | WM030 |
| UB9310A | WM300 |
| UB9310A-AUX2 | WM320 |
| UB9340A | WM310 |
| UB9340A-AUX2 | WM330 |

# Cross Reference

neptronic®

Use this at-a-glance cross reference guide to select the Neptronic actuator that directly or most closely replaces models by other manufacturers. Although only low voltage motors without peripherals have been listed to simplify the table, it amply demonstrates Neptronic's versatility in torque range for both digital and analog actuators either fail safe or non-fail safe.

| MANUFACTURER | BELIMO | JOHNSON | | INVENSYS | SIEMENS | HONEYWELL | NEPTRONIC |
|---|---|---|---|---|---|---|---|
| *for torque <20 in. lb.* | | | | | | | |
| **Torque** | **18 in. lb.** | | | | | | **18 in. lb.** |
| Digital & Fail Safe | TF24 | | | | | | **CT060S** |
| Analog & Fail Safe | TF24-SR | | | | | | **CM060S** |
| *for torque <35 in. lb.* | | | | | | | |
| **Torque** | **35 in. lb.** | | | **35 in. lb.** | | **25 in. lb.** | **35 in. lb.** |
| Digital & Fail Safe | LF24 | | | MX40-7043 | | ML8175C | **DT060S** |
| Analog & Fail Safe | LF24-SR | | | MS40-7043 | | | **DM060S** |
| *for torque <55 in. lb.* | | | | | | | |
| **Torque** | **35 in. lb.** | **53 in. lb.** | **35 in. lb.** | **35 in. lb.** | **44 in. lb.** | **35/44 in. lb.** | **50 in. lb.** |
| Digital | LMX24-3 | M9106-AGA | M9104-IGA | MF40-6043 | GDE131 | ML6161 | **BT000S** |
| Digital & Fail Safe | | M9206-AGA | | | | | **BT060S** |
| Analog | LMB24-SR | M9106-GGA | | MS40-6043 | GDE161 | ML7161 | **BM000S** |
| Analog & Fail Safe | | M9206-GGA | | | | MS7505 | **BM060S** |
| *for torque <100 in. lb.* | | | | | | | |
| **Torque** | **60/70 in. lb.** | **70 in. lb.** | | **60/70 in. lb.** | **62/88 in. lb.** | **70/88 in. lb.** | **70 in. lb.** |
| Digital | NMB24-3 | M9108-AGA | | MF40-6083 | GLB131.IP | ML6174 | **ST000S** |
| Digital & Fail Safe | NF24 | | | MX40-7073 | GMA131 | MS8110 | **ST060S** |
| Analog | NMB24-SR | M9108-GGA | | MS40-6083 | GLB161.IP | ML7174 | **SM000S** |
| Analog & Fail Safe | NF24-SR | | | MS40-7073 | GMA161 | | **SM060S** |
| *for torque <150 in. lb.* | | | | | | | |
| **Torque** | **133 in. lb.** | **140 in. lb.** | | **133 in. lb.** | **132/142 in. lb.** | **142/150 in. lb.** | **140 in. lb.** |
| Digital | | M9116-AGA | | MF40-6153 | GEB131.1U | ML6184 | **LT000** |
| Digital & Fail Safe | AF24 | M9216-AGA | | MX40-7153 | GCA121 | ML8195 | **LT060** |
| Analog | | M9116-GGA | | MS40-6153 | GEB161.1U | ML7284 | **LM000** |
| Analog & Fail Safe | AF24-SR | M9216-GGA | | MS40-7153 | GCA161 | ML7295 | **LM060** |
| *for torque <180 in. lb.* | | | | | | | |
| **Torque** | **160 in. lb.** | | | **150 in. lb.** | **177 in. lb.** | **175 in. lb.** | **180 in. lb.** |
| Digital | AMB24-3 | | | | GBB171 | MN6120 | **TT000** |
| Digital & Fail Safe | | | | MX40-7173 | | MS8120 | **TT060** |
| Analog | AMB24-SR | | | | GBB163 | MN7220 | **TM000** |
| Analog & Fail Safe | | | | MS40-7173 | | MS7520 | **TM060** |
| *for torque <360 in. lb.* | | | | | | | |
| **Torque** | **266 in. lb.** | **210 in. lb.** | **280 in. lb.** | **300 in. lb.** | **310 in. lb.** | **310 in. lb.** | **360 in. lb.** |
| Digital | GMB24-3 | M9124-AGA | M9132-AGA | MF40-6343 | GIB171 | ML6194 | **RT000** |
| Digital & Fail Safe | | | | | | | **RT060** |
| Analog | GMB24-SR | M9124-GGA | M9132-GGA | MS40-6343 | GIB161 | ML7294 | **RM000** |
| Analog & Fail Safe | | | | | | | **RM060** |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